PART FIRST.

THE

PHYSICAL SYSTEM.

Library of the Theological Seminary,
PRINCETON, N. J.
Presented by Rev. S. D. Alexander, D.D.
N. Y. City
BS 650 .H6 v.1
Hodgman, Stephen Alexander,
1808-1887.
Moses and the philosophers

MOSES

AND

THE PHILOSOPHERS;

OR,

Plain Facts in Plain Words.

"VERITAS POTENS EST QUE PRÆVALEBIT."

BY

STEPHEN ALEXANDER. Hodgman

PHILADELPHIA:
SOLD BY SUBSCRIPTION.
1881.

Copyright, 1881.

FERGUSON BROS. & CO.,
PRINTERS AND ELECTROTYPERS,
PHILADELPHIA.

AXIOMS IN PHYSICS.

I. There is no effect without a cause.

II. There cannot be Evolution without Involution; that is, the character of the effect must be as that of the cause.

III. Material causes are only second causes.

IV. Second causes imply a First cause, as there is no chain without a beginning.

V. Matter is not known by us in its simplest elements.

VI. We know Matter by its properties, as inertia, gravity, affinity, impenetrability, etc.

VII. Every simple Element has an affinity for other Elements, by which they unite and form all the compound substances known to us.

VIII. Matter is not self-existent, but created; as, otherwise, the present system of things must have been eternal.

IX. Circular motion is produced by two forces, ever-acting.

X. The motions of the heavenly bodies could not have been self-originated.

XI. No atom of matter can ever be annihilated, except by the Power which created it.

XII. Matter cannot develope mind, since the effect must be as the cause.

CONTENTS OF THE VOLUME.

CHAPTER I.—INTRODUCTORY: PHILOSOPHY OF UNBELIEF.

II.—THE NEBULAR HYPOTHESIS.

III.—THE MATERIAL BUILDING; OR, CHEMICAL COMPOSITION OF THE GLOBE.

IV.—THE UNIVERSAL DELUGE.

V.—THE DAYS OF CREATION.

VI.—THE GLACIAL THEORY EXAMINED.

VII.—THE CARBONIFEROUS AGE.

VIII.—THE GARDEN OF EDEN, AND THE ANTEDILUVIAN WORLD.

IX.—THE THEORY OF EVOLUTION.

X.—NATURAL AND REVEALED SCIENCE.

PREFACE.

MOSES still lives. Twelve hundred years after the record of his death, he was seen alive in "the holy mount," by three witnesses whose testimony cannot be invalidated. But there have been epochs in the world's history, when infidels believed that the great Lawgiver was dead, beyond the hope of resurrection. One of those epochs was in the early part of the Christian era, when the tyrant Dioclesian ordered the sacred writings throughout the Roman empire, to be gathered together and burned in heaps, which was done.

Another similar epoch was when Voltaire made it his boast that with his own right hand, which he employed in writing his infidel tracts, he would destroy the labors of the twelve apostles, which they had wrought with both hands.

The present age is another similar epoch when infidelity is making such progress, and is so far in the ascendency just at this hour, that some of them are

beginning to predict that Christianity is almost in its last throes, and that *the age of reason* is once more beginning to dawn on their gladdened vision. But let us forewarn them that the ancient and irrepressible Lawgiver, having survived through all the wars of more than thirty centuries, still lives, and shows no signs of age or decrepitude. There never was an age, when there were more copies of the sacred books read and sold than in the present age.

It is true their professors and presidents have taken possession of our institutions of learning, and are imbuing the minds of our youth with the principles of a false philosophy. And they have brought their crude speculations to the altars of learning, and had them christened as science. And they have enlisted many of the public reviews, and the large daily journals in our cities, on their side, and are doing all they can to spread their atheistic notions. And we must say that the horizon looks somewhat darkened, especially when so many of the learned divines seem disposed to join hands with them, in the work of disseminating these rationalistic views. In vain have we been looking for a protest against sentiments uttered in the most august assembly of divines ever met on this continent, by a distinguished member of that as-

sembly. As reported, the paper read by him contained the following passage:

"There is a manifest and a wise end in the joints of our frame—as for instance, the ball and socket of the shoulder, but there is quite as palpable a purpose in the way in which these joints have been formed in the geological ages."

Here we are taught, and our sons at college are taught, that these human frames of ours were formed or developed in the geological ages—that they were formed not from human bones, as human beings did not live in the geological ages—but that they were formed or developed from the bones of inferior animals—which is the philosophy taught by Messrs. Darwin, Huxley and Spencer. And we have not learned that there was a dissenting or a protesting voice in that assembly of divines. This is an omen of no good. It shows whither we are drifting.

But we do not lose faith. The Scottish church, and the Presbyterian church in America may become apostate, as other churches have become in past ages, but Moses will live still, and the Bible will spread, and permeate other lands, and Christianity will gain the ascendency at last. This is one of the preordained events, which is just as certain to come to pass as that

Jesus is at the head of His church—the glorious God-man, whose humanity was never developed from the nature of a monkey, or a serpent, but from that glorious and perfect type of humanity, which stood forth in primeval innocence and beauty in the first paradise.

It is about time for all who are the friends of truth, to rally around the old standard. Let the irrepressible Lawgiver—let Moses, once and again, be heard, speaking in the majesty of truth itself, and their absurd fictions will pass away like airy phantoms, or as the morning mists before the rising sun.

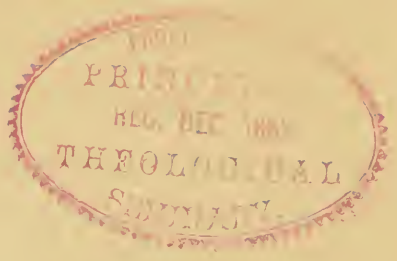
In the following chapters, the simple aim has been to show that Moses wrote the true and philosophical account of the origin of things, and that all the latest discoveries in science go to establish, and confirm this account. When this shall be made manifest, the dreams of these pseudo-philosophers must prove to be as evanescent as they are fanciful and false.

The author has only to add that, forty years ago, he obtained from Moses the key that unlocks and solves all the mysteries connected with the physical aspect of our globe. He wrote out his views at the time, but laid aside the manuscript, determined to wait for confirmatory evidence from the light of nature. There was no chair of geology in any of our colleges then.

But he did not wait very long. He read in Cuvier, and Humboldt, of *sea and land changing their places*, and of *continents upheaved, but never again submerged.* He stood on mountain eminences, and saw the unmistakable signs of a prehistoric convulsion and upheaval. And still later, he has read the reports of scientists as to the recent upheaval of the continents, the age of the great rivers, etc.—facts which will not now be controverted. And the facts demonstrate the truth of the Mosaic Record. And he sends forth this volume, the fruit of forty years' study, with no misgivings as to the verdict which will be rendered by the thinking part of the world. And let God have all glory.

THE AUTHOR.

PHILADELPHIA, *April*, 1881.



CONTENTS.

CHAPTER I.

INTRODUCTORY—PHILOSOPHY OF UNBELIEF.

Atheism grounded in sottish ignorance or pride of intellect—Materialists worship nature—The French philosophers—The uniformitarian theory—Hume and Strauss—A beautiful anecdote—Testimony of Dr. Priestly—Disguises of infidelity—No midway station—Rationalists are materialists—Materialism is fatalism—Picture of Atheism—The true Bible doctrine in contrast—National sins always judged—Laws of nature and a special providence—Free agency not impaired—The bondage in Egypt—The bondage in America—No second without a first cause—Words of Lord Bacon—Eloquent extract from Kant—Wandering stars 15

CHAPTER II.

THE NEBULAR HYPOTHESIS; OR HOW THE WORLDS WERE ORIGINATED, ACCORDING TO THE PHILOSOPHERS.

The atomic theory—The old pagan philosophers—Grand words of Plato—The change originated by Copernicus—Heated nebulous matter—A case of evolution—How the heat was originated—A cooling and contracting process—What becomes of all the heat—No such thing as annihilation—Fusibility of matter—Pure gold found in solid granite—The theory in conflict with the law of gravitation—Prof. Mohr's experiment in Artesian wells—The achievement of Lord Rosse's telescope—A "rash generalization"—Motions of the heavenly bodies unexplained—What Prof. Proctor said—The loss of heat not accounted for—The more and more rapid motions—The idea which Laplace had—The hypothesis self-contradictory—The "sum total" of Fichté—The old Brahminic doctrine of evolution—Myth of the golden egg—Compared with modern evolution 40

CHAPTER III.

THE MATERIAL BUILDING; OR, CHEMICAL COMPOSITION OF THE GLOBE.

Granite the foundation—Granite and oxygen—Composition of water, and the air—A law of chemical affinity—Not developed from heated star-dust—Sixty-three elements of matter—Books composed from twenty-six letters—No new element can be created—No atom can be annihilated—A necessary and logical inference—What the effect would be if the globe were dissolved by heat—Violence of chemical action—Oxygen imprisoned in a block of granite—What Faraday and other philosophers said—Extract from Faraday—Disturbing causes—The upheaval—Volcanic action—Extracts from Encyclopædia Britannica—General principles of volcanic action—Rapidity of volcanic action—Instances—Quotation from Huxley—The coral reefs—What the microscope shows—How new continents were formed by marine animalculæ—Proof that matter is not eternal—Every atom obedient to the laws of matter—No waste in creation—Absurdity of calculations—Exact harmony between nature and revelation 67

CHAPTER IV.

THE UNIVERSAL DELUGE; AND HOW THE SURFACE OF THE GLOBE WAS CHANGED.

There was a universal deluge—Three arguments—1st, the Bible—"I will destroy them with the earth"—"All the fountains of the great deep were broken up"—"Overflown with a flood"—"Overflowed with water, perished"—The sea changed its place—2d, Universal Tradition—The Chaldaic—The Chinese—Man must have lived before the flood—Necessary inference of Humboldt—3d, Facts of Geology—Philosophic argument, not water enough—Natural causes did not produce the change—Words of Cuvier—Of Agassiz—Only alternative, a supernatural cause—Testimony of Dr. Dawson—Of Prof. Marsh, of Yale—Of Prof. Owen, of London—The Upheavals on opposite sides of the globe, simultaneous—Occurred at the date of the flood—Age of the great rivers—The Mississippi—The Nile—The Niagara—A universal fact—Another curious fact—Wonderful incident mentioned by Darwin—Two objections considered—Size of the ark—That only a small part of the earth was inhabited—What an old man said—Pitcairn's Island—A mathematical calculation by Euler—Three important reasons 95

CHAPTER V.

THE DAYS OF CREATION; OR HUGH MILLER'S THEORY OF VAST PERIODS SHOWN TO BE IN CONFLICT WITH REVELATION, AND THE LAWS OF NATURE.

How scientists have been led into grave errors—Grandiloquent extract from Tyndall—Bishop Butler—The change in Hugh Miller's views—A damaging book—Pride of intellect—Miller's new names—The carboniferous age—Vegetation during vast ages before the existence of the sun—Animals and plants contemporary—A geological fact, Dr. Buckland—The Sabbath not a natural day—Extract from Miller—From Dr. Dawson, a follower of Miller—The law of Moses—Visible signs of the change in Scotland and America—Gravitation a law of matter—Utterly subverted by the theory of vast periods—Formation of the earth's surface—Self-contradictory arguments—Miller's "placoids and ganoids"—What a shrewd writer says—Rapidity with which herrings multiply—The Niagara Falls—A "probable conjecture"—Prof. Huxley's qualms—Extract from Prof. Christlieb—The fauna and flora all of a marine nature—Logic of modern scientists—All modern science speculative—Extract from the "Anthropological Review"—A closing word . . . 121

CHAPTER VI.

THE GLACIAL THEORY EXAMINED; AND SHOWN TO BE THE DREAM ONLY OF A DREAM.

"Lost rocks" or "bowlders"—Where found—The Richmond bowlders—Size of the Alpine bowlders—The phenomenon never explained—What Agassiz says of the "drifts"—Charles Darwin—Dawson on the "age of the Arctic cold"—The theory of Agassiz—Severity and duration of the cold age—Reasons why we cannot believe the theory—The sun must have ceased to exert his influence during that age—It is in conflict with the Nebular hypothesis—Geologists cannot formulate the theory—Agassiz and Lyell—The Alpine glaciers—A copper bowlder in Illinois—The solution in Genesis—The sudden upheaval—An event beggaring all description—Direction of the ocean currents—Testimony of Agassiz—The American Encyclopædia—Dr. Hitchcock—Nine indisputable facts—A surrender of the fort—Proof—The invention of four fictions—The next fiction to be invented 155

CHAPTER VII.

THE CARBONIFEROUS AGE; SHOWN TO HAVE BEEN IDENTICAL WITH THE ANTEDILUVIAN AGE.

The proposition to be proved—Preliminaries—Composition of coal—Where the vegetable matter grew—Conflict of opinions—Miller's compromise—A *reductio ad absurdum*—Marine vegetation—Testimony of Humboldt, Oken, and the author of "*Vestiges of Creation*"—Four corollaries—What Agassiz said—What Proctor said—Coal beds formed in the sea from marine vegetation—Conditions of matter to form coal not possible on dry land—Chemical action in the formation of coal—A universal law—Examples—Rocks and ores crystallized—The down on the flesh of a babe—Shell limestones—Views of Prof. Dana and Sir Charles Lyell—A curious mistake of Huxley—Demonstration from the chalk line—What Huxley said—Cause of the breaks in the chalk line—Real state of the case—Dana's testimony—No fossils of land animals or plants found in the coal—Prof. Ansted—The Philadelphia *Press*—Argument summed up—Is geology a science?—The rage for fiction—Conflict between truth and error 189

CHAPTER VIII.

THE GARDEN OF EDEN, AND THE ANTEDILUVIAN WORLD, VIEWED FROM THE STANDPOINT OF SCIENCE.

The cradle of mankind—Extract from Martindale's Bible Dictionary—The description in Genesis—No such locality existing now—What a missionary in Asia says—The flood changed the earth's surface—A scientific argument suggested by Prof. Maury—Where the ark must have been built—When the mountain ranges were upheaved—Extracts from Beaumont and Agassiz—Where Noah must have lived—Climatic conditions of the former continents—Origin of our mountains—The geological proofs—Four inferences—No volcanoes on the ancient earth—No rain storms with thunder and lightnings—How the primitive earth was fertilized—The first rainbow—No marshes, nor deadly malaria causing epidemics—Wonderful fertility of the primitive earth—Origin of our great rivers—How the Mississippi was formed—Longevity of the antediluvians—Three causes assigned—Fruits of rainless countries—Animal food—Fearful mortality in this present age 215

CHAPTER IX.

THE THEORY OF EVOLUTION A FICTION, AND THE CONSUMMATION OF ALL FOLLIES.

What the evolution philosophers believe—Contrasted with the Pythagorean belief—What a popular preacher said recently—Synonymous words—Pantheism, atheism, evolution—How life began—Extract from "Vestiges of Creation"—From a Christian geologist—Four great types of life—Man from a monkey and from a fish—A close calculation in the "North American Review"—Six objections to the theory of evolution—It is an attempt to legislate God out of the universe—It has no foundation—Not one geological fact to support it—Testimony of Miller, Sedgwick and Agassiz—Darwin's early progenitors of man—What the Duke of Argyle says—Max Muller—Sir George Mivart—Protest of Agassiz—Darwin's doubts and complaint—The faculty of speech not developed—Max Muller—Prof. Huxley—Darwin caught a glimpse—Another case of development, the Electric Ray—Mechanism of the eye—Prof. Tyndall's theory—Evolution is pantheism—An evolutionist not a Christian—Huxley's pretended demonstration—Evolution of our horse from the bones of animals that perished in the cold of the Arctic age 240

CHAPTER X.

NATURAL AND REVEALED SCIENCE; THE KNOWABLE AND THE UNKNOWABLE.

Students of physical science—A higher order of students—Who are philosophers—The only knowledge that will satisfy—Vain efforts to philosophize—To prove that all things were developed from star dust—A first principle in philosophy—Huxley's biology—A man and a dog the same in their origin and destiny—The trouble with materialists—The knowledge of God a necessity—Confession of J. S. Mill—A warfare against humanity—Physical science does not meet the wants of man's nature—That knowledge must come by Revelation—Herbert Spencer's effort to prove an impossibility—His idea of environment—A stream cannot rise higher than its source—Development of races—China—Scotland—Development wherever the Bible goes—Moral and intellectual progress co-extensive—Grand themes of the Bible—The only study that can fully develop the human mind—Tested in Scotland 284

MOSES AND THE PHILOSOPHERS.

CHAPTER I.

Introductory—Philosophy of Unbelief.

Atheism grounded in sottish ignorance or pride of intellect—Materialists worship nature—The French philosophers—The uniformitarian theory—Hume and Strauss—A beautiful anecdote—Testimony of Dr. Priestly—Disguises of infidelity—No midway station—Rationalists are materialists—Materialism is fatalism—Picture of atheism—The true Bible doctrine in contrast—National sins always judged—Laws of nature and a special providence—Free agency not impaired—The bondage in Egypt—The bondage in America—No second without a first cause—Words of Lord Bacon—Eloquent extract from Kant—Wandering stars.

IT has been made a question by many whether the human mind can, under any circumstances, become so incapable of reflection, or so dead to all sense of virtue, as utterly to ignore the existence of a Supreme Being, who is the intelligent First Cause of things. But when we see them live as if there were no God, and when they tell us that they do not believe in the existence of a God, we have to take them at their word. Atheism comes either from sottish ignorance or from pride of intellect, but the original cause or ground of it is depravity.

There is a class of minds so uncultivated and ignorant, that they cannot reason from what is seen to what is unseen, and all whose pleasures and pains are

such as have their origin or foundation in their corporeal nature. All their thoughts and aspirations, their hopes and prospects, are bounded by the short span reaching from the cradle to the grave. They are born, like other animals, they eat, sleep, propagate, then die like other animals, and, as they think, that is the end of them. As for the idea that they are in the possession of souls or spirits capable of a separate existence, when their breath has passed from their bodies, that is a thought their minds are unable to grasp.

Whether these persons are more to be pitied or blamed may be considered as a question. But there is so little of intellectuality belonging to them, that it is almost impossible to reason with them, or induce them to listen to reason. There seems to be almost a total effacement of the divine image, if, indeed, it was ever once impressed on their natures. Can it be that humanity once so exalted and so glorious, in which Jesus himself appeared, is capable of sinking so low!

But there is another sort of scepticism that has its origin, not in brutish ignorance, but in false philosophy, which may, therefore, be termed materialism or *philosophic atheism*. The unbelievers of this class are not the ignorant and the unlearned; but they are men of science who even make a boast of their learning. They are professedly students of nature, and from being students become worshippers of nature; as we read in the volume of sacred truth concerning some, that, "professing themselves to be wise, they became fools, and worshipped and served the creature more than the Creator, who is blessed forever." These are *materialists*. We sometimes speak of them under the

designation of *rationalists*. But especially do they desire to be known as philosophers, and as men of science, who, as Lord Bacon said, "standing on the pinnacles of the sciences," affect to look down on all below them as weak-minded and superstitious. It would not be an easy matter to draw the line of distinction between *materialism* and *atheism*.

It was nothing else but the deification of nature in the last century that, gradually, but surely, precipitated the philosophers of France into the abyss of atheism, and brought upon that hapless country the terrible revolution of 1793. That system of philosophic scepticism may be summed up in these words: "All things continue as they were, and all things shall remain as they are, because the works of nature are uniform and her laws never change." Prof. Huxley, in one of his lectures, defined it in these words, which are of precisely the same import, viz.: that "the order of nature which now obtains has always obtained, or, in other words, that the present course of nature, the present order of things, has existed from all eternity." And he says that this hypothesis was generally held, and that it was the "favorite fancy of antiquity," and further, that geologists were familiar with it as "the doctrine of *uniformitarianism*."

This old and favorite fancy excluded the idea of any permanent change in the operations of nature, and set at naught the Christian belief in the doctrine of miracle, and of a special providence. The great argument of David Hume against the miracles of the Bible had its foundation in this philosophy. That great leader at one time of German thought, Strauss, rested his

argument on the same false foundation, when, to disprove the divinity of Christ, he said:

"An exceptionless experience proves, that only by the concurrence of the sexes, is a new human being generated," which, if the maxim were true, would prove that the first man and woman on earth must have had human fathers and mothers as well as Christ. And it would prove that because we have never known an oak tree to be produced only from an acorn, therefore the very first oak that ever grew must have been produced from an acorn, which acorn must have grown on an oak. This was reasoning in a circle, and this reasoning would, of course, make the present order of nature to have been eternal.

A beautiful anecdote has been related—whether true or not, is not material—of a little girl who once asked a French savant, who was giving utterance to his atheistic notions, "Sir, can you tell where the hen's egg came from?" "Well, it was laid by the hen," he replied. "But where did the hen come from?" the little girl continued. "Well, she was hatched from the egg." "Then which was first, the hen or the egg?" the little philosopher again asked; when the old philosopher became silent, as he found himself running into the everlasting circle. Of course no one believes this uniformitarian theory now; yet, as Huxley says, it was "a favorite fancy of antiquity." That is a good word, as descriptive of the philosophy, for it was nothing but a fancy. Yet it was far more popular less than a century ago than the new philosophy which is to supplant it ever will be. Dr. Priestly gives us a very good idea of the popularity of this system of

philosophy, when, after having travelled much in Europe, he tells us that all the philosophical persons to whom he was introduced in Paris were unbelievers in Christianity, and even professed atheists. He says, further, that, as he chose to appear on all occasions as a Christian, he was told by some of them, that he was "the only person they had ever met, of whose understanding they had any opinion, who professed to believe in Christianity." This "favorite fancy" or the uniformitarian system of philosophy had so far gained the ascendency in that age, only one century ago, that even some who professed faith in the Christian system, were afraid to avow it publickly, lest they should be considered as weak-minded or ignorant.

But what is the spectacle we behold to-day? The Darwins, the Spencers, the Huxleys are doing their very best to extirpate that old philosophy, and to substitute for it another system as a foundation for atheism, which is not any more entitled to credence and respect, than the system which they are laboring to destroy. Huxley says that we can go back to the period when there was no life on this globe, and therefore, "the hypothesis of the eternity of the present condition of things must be put out of court altogether." No, they cannot for a moment entertain that old uniformitarian theory that was so universally entertained by the atheistic thinkers of the last century, and the beginning of this, but are working hard to build up another system ten times more absurd and false, and which never can be made half as popular. No one has been more actively engaged in effecting this change in the philosophy of unbelief, than Prof.

Huxley. Several years ago, when travelling in these States, he addressed a public audience in Buffalo, and in the address, he said:

"It is popularly said abroad, that you have no antiquities in America. If you talk about the trumpery of three or four thousand years of history, it is true. But in the large sense, as referring to times before man made his momentary appearance, America is the place to study the antiquities of the globe. The reality of the enormous amount of material here has far surpassed my anticipation. I have studied the collection gathered by Prof. Marsh, of New Haven. There is none like it in Europe, not only in extent covered, but by reason of its bearing on the problem of evolution; whereas, before this collection was made, evolution was a matter of speculative reasoning, it is now a matter of fact and history, as much as the monuments of Egypt."

This sceptical philosopher knew that a quarter of a century ago, evolution was only a speculative idea, but he asserts that now it is a matter of fact and history, as much as the pyramids of Egypt, which no lapse of years can change. Such an assertion is simply childish, and proves that the author is no philosopher. He knew that the forms of Lyell, Hugh Miller and Agassiz, have scarcely yet mouldered in their graves, and they dealt death-blows against this new atheistic system. The professor must have known that evolution is still only a speculative idea, with not one tithe of the proof of the old uniformitarian philosophy which is now defunct, after such a long and triumphant career. The three distinguished scientists just named, have left on record, their united and emphatic testimony that there

is not a fact in geology nor any other department of science—not one fact that favors the development theory, but that, on the contrary, all the evidence is against that theory. Prof. Huxley offers no evidence—never has advanced a single fact in support of the theory—nothing that has even the plausible appearance of a fact. He has inspected so long and so intently the anatomical structure of the gibbon and the baboon, that he fancies he has discovered a general resemblance between some of the bones of these animals and the anatomy of man, and the idea has got hold of his mind that the latter must be a lineal descendant of the former. And having once got the idea, he has pondered it and revolved it so long in his mind, that there is no doubt he really believes it himself, and perhaps, he thinks that the whole world ought to adopt it, and that they are just on the point of accepting it on his authority. It is well known what an extraordinary influence a single thought will often exert on the mind, even of a great man, when it has been allowed undue preponderance. Men become monomaniacs in this way. To what extent the professor may have been carried away in his enthusiasm for the new philosophy, the world may judge from the following closing sentence of the address before quoted from:

"In that collection (Prof. Marsh's) are the facts of the successions of forms, and the history of their evolution. All that now remains to be asked is *how*, and that is a subordinate question. With such matters as this before my mind, you will excuse me, if I cannot find thoughts appropriate to this occasion."

Now here is a man—and man has no higher origin

than a worm—and man is a worm according to the new philosophy—here is a man—a worm, saying that the facts and the history of evolution are *known*—and the only question that remains is, *how* evolution went on—*how* life was evolved from death—*how* plants first sprung from matter—*how* animal life was evolved from vegetable life—*how* fishes were evolved from mollusks—how quadrupeds and land animals were evolved from fishes, and *how* man was evolved from a quadruped—he, a man, a worm himself, for he does not claim to be any thing more than an animated lump of matter—he is going to solve this problem of evolution—to give us the *modus operandi*—and explain how all this was done; and having such thoughts occupying his mind, he excuses himself for not being able to speak words appropriate to the occasion.

In our age, Christianity is not so unpopular as it was a century ago. On the contrary, it has made such progress, that now the term infidel—or atheist—has more of opprobrium connected with it than the name of Christian. It is for this reason we have so many new sects springing up in the name, and under the general auspices of Christianity. They do not like to be called atheists or infidels, and they take such names as universalists, spiritualists, rationalists, and liberals. But these have only the name, or the form of religion without the substance. But there is no such thing as the possibility of a compromise between Christianity and infidelity—between religion and no religion. If the Bible is the inspired word of God, we have to accept it as a whole, or reject it. If the Bible is true, there is a heaven and a hell—two different habitations

prepared for the righteous and the wicked hereafter, and we are to be saved from our sins alone through Christ. But if the Bible is not true, we have no use for it but to treat it as a book of fables and lies. Then we can consistently give to the winds our cares and our anxieties, and do as they once did, write in large letters, over the gates to the church-yards—"Death an Eternal Sleep!"

There is no midway station or stopping-place between these opposite extremes of receiving the Bible as true, and following it, or rejecting it as false, and then putting it under our feet. When one of these liberal Christians proclaims, as Mr. Frothingham did, that "the best of Christians can scarcely equal Herbert Spencer in the purity of his life, who knows nothing of the Bible," it is only saying that a man who does not believe, can be as good as one who does believe; and so, to be saved, a man does not absolutely need a Bible, or a Saviour. That is the meaning. But that is a very different thing from Christianity.

All acknowledged atheists believe in the eternity of matter. This is their first cause of things. They are honest and candid in the avowal of these principles. But these liberal Christians who are neither infidels nor Christians; neither believers nor unbelievers; these spurious Christians—they also believe in matter as much as real atheists, and in the unvarying laws that govern matter. All events that occur in the natural world, as they believe, come to pass in obedience to those laws of matter, and these cannot be relaxed or suspended in answer to prayer. The Almighty himself, as they hold, does not interfere with

the operation of those laws. The Deity whom these rationalists worship is something like the god of Epicurus of old, whose blessedness consisted in entire freedom from all thought of care or occupation, having nothing to do with the affairs of mortals. Nature was said to pursue her course in accordance with everlasting laws, without any interference on the part of the gods. They might spend their eternal years in pleasure or sleep, or in any other way, but they had nothing to do with our mundane affairs. So these rational and very liberal Christians believe. Therefore, all the natural calamities that occur, as the great fires, the earthquakes, the storms, the epidemics, the famines, etc., have to take place in obedience to those laws of matter. Practically, then, there is no difference in the faith of an atheist and that of a rationalist. For all that God has to do with our world, there is no law but gravitation: the inflexible, iron law of necessity—"the beautiful necessity"—as one of them speaks of it. Under that law, there is no such thing as moral responsibility.

And these liberalists, while they call God "our Father" and "Lord," profess to believe that He permits these laws of nature, seeing that He either will not or cannot control them, to destroy about thirty millions of His children annually, in the most frightful ways—by burning, scalding, drowning, engulfing, starving, and so on; and that His children cannot avoid these calamities, because they are ignorant of those laws of nature which cause them; and that, even if they had a perfect understanding of them, they could not avert them. If there be any choice, it would

be preferable to be an atheist, and to say there is no God, than to believe in a God who spends His eternal years in idleness, leaving His children exposed to all these miseries, without the disposition or the ability to protect them. We could not believe in such an impotent and indolent Deity. It would be better to take the alternative which John Stuart Mill chose, and to plunge into the abyss of absolute atheism.

But what pen, in fitting terms, can draw a picture of atheism? To be an atheist is to believe that the destiny of man is similar to that of a beast which does not think, and that he has nothing to do, but to eat and drink, and make himself fat for the day of slaughter. It is to believe that there is no future for the soul, and that its aspirations after God, and its hopes of an immortal life, are all deceptive illusions, and mocking dreams to cheat the mind. To be an atheist is to believe that there is no such thing as moral good or evil, and no moral responsibility; and that man, at his best estate, is a mere puppet, the sport of every accident, driven and tossed like the merest waif on the resistless current of time. To be an atheist is to believe that there is no such thing as the crime of blasphemy, perjury, murder, or any such thing; and that these terms are only conventional—expressive of what has no real existence. And to preach this doctrine would be to evoke the days of Robespierre and Danton, and to turn the earth into a pandemonium.

In contrast to this fatalism, how beautiful, how divine is the system of doctrine revealed in the Bible! In the light of that system, every thing is clear, every thing satisfactory! God made man upright, in His own

image. He made a beautiful world which He decorated and garnished with all manner of delights, and man was supremely blest. There was nothing in nature at war with him then. The fire, the air, the earth, the water, all the elements were God's servants, which He made to minister to the happiness of man, instead of making war against him. But when man became a sinner by rebellion against the divine law, in order to vindicate the law, and show His opposition to sin, God was bound by the holiness of His own nature, to inflict the penalty due to sin. He turned against man, only when man had departed from Him. Then the happiness of Eden was marred. The curse fell on the ground for man's sake, and it began to bring forth thorns and thistles. The elements of nature became hostile, and all things were changed. Man became more and more alienated—the children revolted more and more, till, as it is recorded, the whole earth was filled with violence.

As God is holy He could not change His law, nor relax its claims, because man had changed. He must send His judgments on the rebellious race, just because He is holy, and His throne is established in righteousness and judgment. When, therefore, any natural evil or calamity has come on the children of men, in whatever form, we may know that it has been sent as a judgment because of the abounding of sin.

Suppose that we cannot always tell what particular forms of wickedness God intends to rebuke, there is crime and wickedness enough in every city and country, to provoke the judgments of heaven. Whenever any particular form of sin becomes so prevalent that it may

be considered a national sin, then we may expect some national judgment to be visited upon that people as an expression of the Divine displeasure against that sin. National sins, as such, are never visited on individuals, but on nations or communities. Individual sins are not often punished in this life; national offenses always are. Nations cannot and will not be judged in the future world as nations; therefore, if they fall into sins or vices that become national, or of general prevalence, God must show His displeasure against such sins, and they will be judged. The judgment may come in the form of war, or famine, or pestilence, or some other way, but it will come, for God must maintain the majesty of His law. And as the proudest, haughtiest monarch of earth was made to confess, "all His works are truth, and His ways judgment; and those that walk in pride, He is able to abase."

A sound philosophy teaches that there cannot be second causes without a first cause, and also that second causes have no power of action in themselves except as they are acted on by a first cause, that has put them in operation. The elements of matter and the laws of nature, are to be considered as instrumental or second causes, that no more have the power of action in themselves than the engraved marble slab, that marks the spot where sleeps the dead. The power that puts them in operation, and controls them, is the will of God, or the special and all controlling Providence of God.

But rationalists do not comprehend how it is that an event, which seems to be perfectly natural, and which comes to pass in the orderly course of events, may yet

be spoken of as an act of God's special Providence. Now the point which we desire to make evident, is, that everything which comes to pass, is Providential, and yet, that Providence makes use of men, while He leaves their wills free, and makes use of all the agencies of nature, without seeming to interfere with the operations of her laws, to accomplish His own most wise designs, and direct the affairs of the world. If we cannot comprehend this, it must be owing altogether to the imperfect state of our knowledge.

This primary and essential belief in a Special Providence is a cardinal principle, in the creed of every devout mind. It will be best explained, perhaps, by one or two familiar illustrations, selected from some chapter or page of real history. And one chapter or page would serve, probably, just as well as any other, could we but read them all equally well. But as we are dull and slow in this sort of reading, we shall select a page or two which, we think, we partially understand.

First, then, let us take a chapter in the history of God's people—as written by Moses, recording an event which may be considered as the corner-stone in the history of that wonderful people—the Jews—made so by the dispensations of God's Providence towards them—we refer to the bondage in Egypt. Many years before, God had announced to Abraham that his seed should serve in a strange land, and be afflicted four hundred years; and that afterward they should come out with a great deliverance, and that He would judge that nation whom they should serve.

We cannot pry into the secret counsels of the Al-

mighty, to know why he ordained that the descendants of Abraham should serve as bond-men and bond-women so long in a strange land. And we need not inquire concerning it. But there is the prediction plainly recorded.

But how was the decree accomplished? We cannot say there was any miracle wrought. There was no interference with any of the laws of nature. God accomplished His purpose, and yet He employed the agencies of nature, and human agents too, even without their own knowledge or consciousness, to perform the decree made known so long before. Let us look at a few of the links in the chain of Providential events which resulted in the fulfilment of His design.

1. There was the circumstance of Joseph's dreaming very singular dreams. But dreaming is a very common and a very natural phenomenon, and a modern rationalist, of course, would think nothing of that. Yet, in this instance, it had the effect to excite the envy and the hatred of Joseph's brethren against him, so that they sold him.

2. They sold him to certain Ishmaelites, who were going down into Egypt. If they had killed Joseph, as they, at first, had plotted to do; or if these Ishmaelites had been going from Egypt into some other country, there is no probability that Joseph would ever have seen that land, and thus the counsel of God might have been frustrated.

3. The Ishmaelites sold Joseph to an Egyptian whose name was Potiphar, in whose house, through the baseness of an outlandish woman, he got into a trouble which led to his imprisonment. But we shall

see that this circumstance led to his subsequent promotion and greatness.

4. In the prison, Joseph became acquainted with certain men who had been high officers of Pharaoh, and interpreted their dreams, which was the circumstance that procured for him, afterwards, an introduction to the king.

5. Pharaoh himself had a very remarkable dream, which Joseph interpreted, after it was found that the magicians could not interpret it, whereupon he obtained promotion over all the land of Egypt.

6. There came a great famine in those days—a very natural event, of course—but, according to the narrative, it was more severe than any known in modern experience, having continued for the period of seven consecutive years. During the prevalence of the famine, the family of Jacob were compelled to go down into Egypt to buy bread.

7. The sons of Jacob discovered that Joseph, whom they had sold years before, was still alive, and that he was the lord over all the land of Egypt.

8. When Joseph had made himself known to his brethren, and was reconciled to them, he persuaded them to bring their father Jacob, with their families and all their substance, and take up their abode in Egypt. Thus was the Divine decree fulfilled.

These were but a few of the links in the chain of Providential events, connected or linked together in such a way as to lead to the result which God had purposed; and we have to say, that, as the first and efficient cause, it was His act, though He had employed men and other instrumentalities in the accomplishment

of His purpose. It was in this sense that Joseph interpreted the event. He said to his brethren:

"God did send me before you, to preserve life." And again he said: "God sent me before you, to preserve you a posterity in the earth." And again: "So it was not you that sent me hither, but God." And once more: "As for you, ye thought evil against me, but God meant it for good, to bring to pass as it is this day, to save much people alive."

This is the interpretation that Inspiration has put on this remarkable passage in sacred history, and therefore we have no need of any human interpretation. But if we look at all the circumstances, or second causes, that culminated at last in the consummation of the Divine purpose, we do not see that there was any special miracle wrought, nor that violence was done to the will of any of those voluntary agents who were instruments in the accomplishment of that purpose.

Every evangelical believer must give his assent to this exposition. But the mere rationalist, or atheist, who explains everything on materialistic principles, will find it impossible to reconcile with his theory, any part of the story concerning Joseph and the sojourn in Egypt. He believes only in second causes—he has no first cause to operate, or to put in motion the second causes, and so he rejects the story altogether as a myth or a fable, as indeed he does the greater part of the Bible.

If, then, it is clear that there was a Special Providence which directed all the steps which led to that important historic event—the bondage in Egypt—which stands out so prominent in the Holy Scriptures, we might stop here and say, "*Ex uno disce omnes.*"

But, for the purpose of illustration, we will use another event, still later in the annals of history—so late, in fact, that rationalists will have no pretext for treating it as a myth—an event which may be considered as the exact counterpart of the one recorded in Jewish history. We refer, of course, to the bondage of the children of Ham in our country, and their deliverance, in whose behalf the Providence of God was almost as conspicuously displayed, as in the deliverance of Israel of old.

The origin of the recent great civil war may be dated back several centuries, as we would say of a majestic oak, that its origin is to be traced to the planting of the acorn a century ago. Let us go back, then, in our thoughts, to the very beginning of our history as a nation.

See that floating speck on the bosom of the Atlantic, midway between Africa and America. It is a Dutch ship, laden with a score or more of the dusky children of Africa, in fetters, who have been torn by violence from the land of their birth. They are landed at Jamestown, Virginia, in 1620, and sold as slaves. That was the planting of the acorn—the beginning of slavery.

It was a horrible crime, as the abolitionist would say—and so it was, viewed only as a deed of rapine and piracy, prompted by the avarice of the kidnapper, and looking to nothing beyond. But, perhaps, those kidnappers, while they were actuated alone by "love of filthy lucre," without any regard to God's will, were employed, unconsciously, as instruments in carrying out one of His designs of mercy.

We look again, and we behold not a single little Dutch ship, but a succession of ocean steamers, crossing the Atlantic in the opposite direction, from America to Africa, carrying home the children of Ham, that had been stolen away centuries before. But they don't return as they came. They have been civilized and enlightened. They are Christians, not barbarians, now. And they are carrying back presents to the mother country—Bibles, science, religion, the arts of civilized life—gifts better and richer than gold. They plant the colonies of Liberia and Sierra Leone. Republics are built up on the shores of that once benighted land.

If we look again, we see that land in the dawning light of the Millennial morn, that had been for ages covered with a pall of Egyptian darkness. The world is converted to God, and Jesus, according to prophecy, reigns King of the nations. The heathen have been given to Him for an inheritance, and the uttermost parts of the earth for a possession. The golden age has come, as foretold by prophets, and sung by poets and sages thousands of years ago. The descendants of Ham, doomed to slavery, who, as some said, had no souls, are all redeemed. Africa is a glorious continent and a part of Christ's universal possession. This is the majestic oak.

Now, let us look at several of the links in that chain of Providential events, from the beginning to the end, or from the planting of the acorn to the full-grown oak.

God's design, as we now understand it, was to send some of the sons of Ham to America, as that was the land of freedom, thrift and enterprise; to send them

there, and put them at school and under a course of training; to learn the virtues of industry, patience, temperance, submission, which they could not have acquired in their own land—to learn the arts of civilized life, and, above all, to gain a knowledge of the Bible and of the principles of Christianity.

They served an apprenticeship about as long as the term that the Israelites served in Egypt, and their time was out. The ship-load of emigrants had increased to four millions in number. They had become civilized, and lost all traces of their former barbarism. They were good farmers, good mechanics, good cooks, good nurses, good seamstresses—they had even acquired the language of the king-race. They were meek, docile, patient, and submissive to authority, certainly as much as any other people in any country. They had learned, above all, the lesson of the cross. Hundreds of thousands were in the church, and many more had gone to glory, who, we doubt not, have donned their sable garments to put on the robes of white.

And now, when God's purpose in their discipline was accomplished, the time had come that they were to go out of bondage. But slavery had become so profitable, that the masters said, they shall not go free. Their will stood in opposition to God's will. One or the other had to yield. They enacted laws to keep the slaves in ignorance, to rivet on them more firmly the chains of bondage. They took away the key of knowledge, and attempted to fetter the mind as well as the limbs. They had filled up the cup of sin, and God said to the Pharaoh of the South, "Let my people go free!"

But they would not hearken to the voice of the Lord. He warned them through his servant Moses, of old. In these last days, he admonished them by such great and patriotic statesmen as Washington, Jefferson, Franklin, Adams, and a host of others; and last, though not least, through the peerless orator of Kentucky, Henry Clay, who labored for years to induce his own State to lead off in the cause of emancipation, but in vain. Yet God's purpose could not be broken; and the redemption of Africa was included in that purpose. And so, as they would not, voluntarily, let them go out of bondage, coercive measures had to be employed to make them willing. By seceding, they compelled the resort to coercive measures. This was the act—the free and voluntary act of the Southern people, but it broke the fetters of every slave. There are no bondmen now in this boasted land of the free. But how the problem as to the removal of the curse could have been solved by peaceful measures, there was no statesman wise enough to have predicted. The Providence of God solved the problem. He "meant it for good," though "they thought evil." "He maketh the wrath of man to praise Him." He leaves the will of man free, and He so controls the laws of nature as to accomplish His vast designs.

The inconsistency with materialists is in the fact, that, when they have ignored the existence of a Supreme Being, they have no place, in their creed, for any *First Cause* of things. And if they should speculate forever, they could never show how it would be possible for any series of second or instrumental causes

to put themselves in operation, so as to secure any given results.

It is true they talk about nature—the operations of nature—the works of nature—the laws of nature. Is nature a goddess? Did nature enact the laws that govern the universe? What is nature but the temple of the universe? But who built the temple? They delude themselves, and they try to impose on others by the use of a word. They substitute the term *nature* for God; and the works of God they call the works of nature. And the laws which God originated for the government of the material world, they call the laws of nature, as if nature were God, and as if by this artifice, they could persuade themselves and others, that nature is something that is instinct with life, and possessed of Omniscience and Omnipotent power, and that there is no other god but nature. Having legislated the true God out of existence, they find themselves in want of something else, to substitute in the place of a first cause, with which they can connect the series of second causes. And so, by speaking of nature as if she were a real goddess, possessed of all the attributes of divinity, they imagine that people may be talked and beguiled into the belief that there is no god but nature.

The folly of the ages will pass away. It is nearly time that they who profess to monopolize all wisdom to themselves, should cease to be the greatest fools living. If there is any principle in natural philosophy that may be considered as a self-evident truth, it is that instrumental or second causes have not the power of causation in themselves, but that there must be an

agent, or an efficient first cause to put them in motion. It must be assumed as an axiom in all reasoning, that without a first cause, there could be no second cause, and no effect.

But there is a necessary limit to the human understanding, so that in the attempt to explore the universe, it is stopped in its researches the moment it seeks to advance beyond second causes, and to comprehend *the First Cause;* or, in the language of Job, to "find out the Almighty to perfection."

It is pride of intellect that urges some men onward to this region of atheistic darkness and gloom. The finite attempts to measure the Infinite, just as if a glow-worm should light up its own little taper, and attempt to criticise the shining of the sun and the stars, and not being able to discover the cause of the superior brightness, should conclude that after all, it was a mistake—that there was no light but that which had proceeded from the emission of its own spark. The atheistic philosopher is bewildered and lost in the contemplation of the flashes from his own little taper. It was wisely said by Lord Bacon:

"When Democritus and Epicurus advanced their atoms, they were thus far tolerated by some; but when they asserted the fabric of all things to be raised by a fortuitous concourse of these atoms, without the help of mind, they became universally ridiculous. So far are physical causes from drawing off men from God and Providence, that on the contrary, the philosophers employed in discovering them, can find no rest but in flying to God and Providence at last."

Here is a similar passage from the celebrated Kant,

whose writings, on the whole, have not done much to further the cause of Christianity. Yet, the beauty of the sentiment, and the conclusiveness of the argument in the following passage, will be admitted by every reader. It would not be easy to say more, or to say it in more eloquent language, for the existence of a Supreme and Intelligent First Cause of things. These are his words:

"The present world opens to us so immense a spectacle of diversity, order, fitness and beauty; whether we pursue these in the infinity of space, or in its unlimited division, that, even according to the knowledge which our weak reason has been enabled to acquire of the same, all language fails in expression as to so many and great wonders—all number in measuring their power—so that our judgment of the whole must terminate in a speechless, but so much the more eloquent astonishment. Everywhere we see a chain of effects and causes, of ends and means; regularity in origin and disappearance; and since nothing has come of itself into the state in which it is, it always thus indicates, farther back, another thing as its cause, which renders necessary exactly the same further inquiry: so that in such a way the great whole must sink into the abyss of nothing, if we did not admit of something of itself, originally, and independently, external to this infinite contingent, which maintained it, and as the cause of its origin, at the same time secured its duration."

The greatest enemy of his kind is the man who labors to absolve his fellow-man from allegiance to that Being who is the author of all existence. For how can an intelligent and immortal spirit be supposed

to be in a proper frame of mind, when it has lost its connection with him, in whom we live, and move, and have our being? It is in the condition of a "wandering star," as described by the pen of inspiration, that has been thrown out of its orbit, and is not in harmony with the rest of the universe—now wildly rushing towards the central mass to be consumed in his scorching flames—and now flying to the farthest limits of creation, almost beyond the range of the sphere of attraction. How lost must such a spirit be, having no sympathy with the great God who is the centre of attraction to the moral universe, and no sympathy with the throngs of holy and happy beings who ever adore and worship that Infinite source of life, and joy, and bliss!

CHAPTER II.

The Nebular Hypothesis; or How the Worlds Were Originated, According to the Philosophers.

The atomic theory—The old pagan philosophers—Grand words of Plato—The change originated by Copernicus—Heated nebulous matter—A case of evolution—How the heat was originated—A cooling and contracting process—What becomes of all the heat—No such thing as annihilation—Fusibility of matter—Pure gold found in solid granite—The theory in conflict with the law of gravitation—Prof. Mohr's experiment in Artesian wells—The achievement of Lord Rosse's telescope—A "rash generalization"—Motions of the heavenly bodies unexplained—What Prof. Proctor said—The loss of heat not accounted for—The more and more rapid motions—The idea which Laplace had—The hypothesis self-contradictory—The "sum total" of Fichtê—The old Brahminic doctrine of evolution—Myth of the golden egg—Compared with modern evolution.

EVERY building or superstructure must necessarily have some sort of a foundation to stand on. The Materialistic System of philosophy has its foundation in what is now called "The *Nebular Hypothesis*," which is only a modification of what was formerly known as "The *Atomic Theory*." It is sometimes spoken of in familiar phraseology, as "the *star-dust* theory." It teaches, that originally, or from eternity, there was nothing in existence but the atoms and the empty space.

It was Democritus, an old pagan philosopher, who originated *the atomic theory*. He lived before the time of Aristotle or Plato; and he said: "The only existing things are the atoms, and the empty space; all else is mere opinion." Democritus said, further: "The atoms

strike together, and the lateral whirlings which thus arise, are the beginnings of worlds."

This is an explicit statement as to the first cause of things, given in the words of the original propounder of the evolutionary scheme. After him appeared Epicurus; and still later, Lucretius, teaching the same philosophy, in which the fundamental principle was that nature pursues her course in accordance with everlasting laws, the gods never interfering."

Lucretius lived about a century before the Christian era, and he made a clearer and more distinct statement of the atomic theory, than either Democritus or Epicurus had done. For he wrote: "The first beginnings —the atoms are indestructible; and into them all things can be resolved at last." Here is their first cause of all things, the atoms—the molecules—invisible to the naked eye—invisible even with the help of a microscope. They have never seen one of them. And yet materialists believe that the invisible atoms or molecules are the makers of worlds, and of all things. Lucretius argued that the interaction of the atoms among themselves rendered all manner of combinations possible. And he combated the notion, that the constitution of the universe had, in any way, been determined by intelligent design, but that from all eternity, these atoms had been in motion, and after trying unions of every kind, at length, by accident or chance, they happened to fall into the arrangement out of which the present system of the universe has come.

This is their whole philosophy in a nutshell. They just beg to have the infinite space in existence, and the

infinite matter, and as Prof. Proctor said, the evolution will go on of itself. Worlds are formed. Stars come into existence—flowers grow—beautiful babes are born—eye-glasses and telescopes are rolled out by evolution. In short, a temple is built, the most magnificent and glorious the eye of man or angel ever beheld, but there is no builder, no architect. The atoms—the invisible molecules, which they never saw, and whose very existence is doubted by another set of philosophers either more or less wise than themselves—these atoms are the sole builders of the temple, the stars, the flowers, the beautiful babes, the telescopic instruments, and all things.

But they are careful to tell us that it was not from design, or forethought, or intelligence, or purpose, that the atoms made or wrought all these wonders, which now exist. But, always, the atoms were in motion among themselves, and when, by chance, they fell into certain positions, these thousands and millions of curious forms and figures happened to result, just as the colors and figures vary in a kaleidoscope when you turn the instrument.

Thus have I shown what materialism is, and how it was originated. But we must not believe that all the old pagan philosophers were materialists. There were indeed, very few of them. We might count on our fingers all the respectable names of philosophers, who were materialists or atheists in the old pagan world. They had little influence over the minds of the masses. The teachers, the philosophers who swayed the minds of the people, were such as Moses, Confucius, Plato and Socrates, who were opposed to

materialism, and taught the existence of a Supreme Being, and the immortality of the soul. Plato has a very noble plea, and it has come down to our times. I will quote a brief paragraph. He said:

"The cause of all impiety and irreligion among men, is the reversing in themselves, the relative subordination of mind and matter; they have in like manner in the universe, made that to be first which was second, and that to be second which was first; for while in the generation of things, mind and final causes precede matter and efficient causes, they on the contrary, have viewed matter and material causes as absolutely prior to intelligence and design in the order of the universe, and thus, departing from an error in relation to themselves, they have ended in a subversion of the godhead."

These noble words of Plato are worthy to be treasured in our memory. The atomic theory suggested by the old heathen philosophers, as already explained, was developed into what is now called "the Nebular hypothesis." The latter has grown out of the former, perhaps, by evolution, as they say man has been evolved from a monkey. But how did this development occur? This is a question which, I think, admits of a definite answer.

A radical change, as we know, had taken place in the system of astronomy. Copernicus had appeared and established the doctrine of the planetary motions. He taught that the earth, instead of being stationary, the centre of the universe, as formerly believed, is in perpetual motion. Now, they wanted a philosophy which could account for these motions of the planetary

worlds. One change necessitates another. And as the old atomic theory gave no explanation, it had to be modified. The atoms, however, are still in existence, and the empty space is still filled with the atoms. But now they call the atoms of matter—nebulous matter. This is all the difference, except that they have got the matter into an intensely heated condition, which is something that the old heathen sages never dreamed of in their day. And this is the Nebular hypothesis—infinite space filled with the atoms, now called *nebulous matter*, in a glowing hot state.

All the matter in the vast universe, as they teach, was originally, in such a heated condition, that it could exist in no other form, but that of a glowing hot gas. There was then not a planet, a sun or a star in existence—nothing but a common mass of glowing hot gas, diffused through infinite space. And now, wonder of wonders! the scientists tell us, that a cooling process began, and that the masses of nebulous matter began to contract as they cooled. This cooling and contracting of the heated gas, the heated atoms of matter, was the origin of all the suns, and stars, and worlds now in existence. It is a slight modification of the theory held by Democritus, Epicurus and Lucretius, but substantially, it is the same. Some may be almost incredulous, when I remark that this theory is actually believed by many who are called scientists in our day, and still more so, when I say, that it is taught as science in not a few of our institutions of learning. But it has no foundation in science. It is wholly unscientific, unphilosophical,

and, therefore, absurd. I proceed now to give a few reasons for this decided opinion.

I. And the first reason I shall name is that which involves the question, how the atoms of matter, or the star-dust got into this intensely heated state which they suppose, if they had been in existence, and had been cool from a by-gone eternity.

Inertia is an essential property of all matter. This is an admitted principle of science. And therefore, no matter—no atom of matter can change itself. No body of matter can go out of one condition into another, without some cause external to itself.

It is quite amusing sometimes to hear a modern evolutionist talk of the constancy of nature's laws. For example, Prof. Huxley said, in one of his New York lectures, in his gravest and most serious manner:

"It has ceased to be almost conceivable to any person who has paid attention to modern thought, that chance should have any place in the universe, or that events should follow any thing but the natural order of cause and effect."

Would you believe that Huxley gave utterance to that profound remark, and yet that in the same lecture, not more than three or four minutes after, he said:

"Though we are quite clear about the constancy of nature at the present time, and in the present order of things, it by no means follows necessarily, that we are justified in expanding this generalization into the past, and in denying absolutely that there may have been a time when evidence did not follow a first order, when the relations of cause and effect were not fixed and definite," etc.

You see, he first asserts that it is not conceivable "that events should follow anything but the natural order of cause and effect." And then, he says, that this "constancy of nature applies only to the present order of things"—and that "there may have been a time"—by which he means, of course, there must have been a time when evidence did not follow a first order—when the relations of cause and effect were not fixed and definite or certain. He had to leave this open door as a way through which he could retreat, or he could never have maintained his theory of evolution. He has shown how our modern horse came into existence in the order of nature, by evolution from the orohippus. But that constancy of nature would not account how, or from what the orohippus or the first horse that ever existed was developed. And so he had to suppose that the order of nature had changed. But this is a slight digression.

I was speaking of the inertia of matter, and saying that no body of matter can go out of one condition into another, without some cause external to itself. A body that has gravity, will have gravity forever, unless some force that is external to itself, shall destroy that gravity. A ball that is motionless on the ground, cannot put itself in motion. No more could a flying ball arrest its own progress, but it would continue in motion forever, if it were not for the resistance of the air, and the attraction of gravitation. So a body that is cold, cannot heat itself. The lamp or gas would never become ignited so as to give light to any in the room, if no match or taper were applied to light them. A mass of wood or coal would never become ignited,

so as to give warmth to any in the house, if a torch or a match were not first applied to set them on fire. All can understand these simple illustrations.

But our scientists gravely tell us that every atom of fuel in the universe, at some very remote period in the past, suddenly became ignited. And there was no one to apply a match or a torch, and no match or torch to apply. For they say, there was nothing but the empty space, and the atoms of matter that filled the space. And that matter was all fuel, because it took fire—became intensely heated—and is burning yet. They say that the central region of our earth is nothing else but a molten mass of matter in an incandescent state. But all that matter was self-ignited. All that mass of fuel that filled universal space, set itself on fire. That is what they pretend to believe. Of course, that was a case in the past, where the event did not follow "in the natural order of cause and effect."

But I may venture to say, that no one ever knew of a case of the kind, in which a mass of fuel set itself on fire, or ever conceived of the possibility of such a thing. It cannot be necessary to argue the question, seriously, with any persons of ordinary common sense, whether or not, any combustible matter can ignite itself. But the philosophers of this new school, who are possessed of something either more or less than common sense, profess to believe—and we suppose of course, that they do believe—that all the combustible matter in the universe took fire of itself, after it had been in a natural or cold state from all eternity! If they can explain how that took place in the natural order of cause and effect, or even outside of that order, we should like to see or hear the explanation.

It is possible, that, to avoid this difficulty, they might say that, as the matter is self-existent and eternal, it was hot from eternity, and has been eternally in a cooling and contracting condition. I don't know whether any believer in the hypothesis would be simple enough to take that position, because he would stultify himself, as it is clearly self-contradictory. Prof. Proctor said, in one of his popular lectures, that an epoch will come, some time in the future, when our globe and the sun, as well as all other globes and suns, will have parted with all their heat, and life must become extinct in all these worlds. Prof. Proctor said this. And it must certainly be true, if, as he affirmed, they are all parting with their heat. But it is equally true, that, if they have been cooling from all eternity, they would have parted with all their heat, and life must have become extinct eternal ages ago. For the eternity past is as long as that which is to come.

Some of these scientists enter into nice calculations as to the length of years during which the globes have been cooling. For example, we have Prof. Proctor, in his lecture on "The Birth and Growth of Worlds," saying:

"The period alone of the earth's cooling has been computed by a German savant at 320,000,000 years." And, he adds, "the epoch when it was struggling with its gaseous sack was still more tremendous."

Now, suppose that we agree to accommodate the learned professor by saying that the age of our earth, or the period that has elapsed since it was a nebulous mass, is, in round numbers, 500,000,000 years old, as

he asserted in another of his lectures—suppose that we admit this, then, if in that period of 500,000,000 years, it has cooled down and contracted to its present solid state, and is a comfortable and habitable globe, we may ask, what would it have been, on the supposition that it had been cooling and contracting for the period of a thousand million, or ten thousand million years? And even that period is as nothing when compared with a past eternity. Do we not see that it would have parted with all its heat, and become entirely uninhabitable eternal ages ago? If, as the professor reasons, such a crisis is to happen in the ages to come, in consequence of the cooling process, then, by the same reasoning, such a crisis must have happened in the ages past, on the supposition that it has been cooling from eternity.

II. A second objection to the Nebular theory involves the question, what becomes of all the heat? If it is constantly passing out of all the matter in the universe—out of the earth—out of the sun—out of the planets—and out of the stars, it must go somewhere. And there are no material bodies into which it can go; for the theory supposes that all the material bodies in the universe are, alike, parting with their heat. Now, our question is, what becomes of all the heat? Certainly, it must go somewhere. Prof. Tyndall says that it is "*wasted.*" That is the word he used. And Prof. Proctor says that only the two hundred and twenty-seventh of the one millionth part of all the heat given out by the sun reaches the earth, or any of the planets lighted by him, and that all the rest passes into empty space, and is utterly wasted. These must be scientific

statements, as they are made by men who profess to be scientists. But let us consider them.

The statement which I dare to make in opposition is, that we know of nothing in the universe of God that is ever absolutely wasted. Not the finest particle of dust is ever wasted, or annihilated. That seems to be a self-evident proposition. It is an axiom in physics, that something cannot come from nothing, and the converse of this must be true, that something cannot go into nothing. For, if it could, that would be annihilation, and there is no such thing known to man.

Therefore, whatever amount of heat was in the material universe at first, must be still in the material universe. And whenever one material mass parts with its heat, there must be another material mass to absorb it. It only changes its place, just as we often change our places, without being annihilated. It circulates like the atmosphere that goes to the north, and then to the south again, ever circulating, but never destroyed; or, like the water that goes up from the ocean, and waters the earth, and returns to the ocean again, but not a drop ever goes out of existence. So with the heat—it circulates—but it does not, and it cannot go out of existence. As pertinent to this question, we quote a passage from Sir Charles Lyell. He says:

"It is a favorite dogma of some physicists, that not only the earth, but the sun itself is constantly losing a portion of its heat, and that, as there is no known source by which it can be restored, we can foresee the time when all life will cease to exist on this planet; and on the other hand, we can look back to the period

when the heat was so intense as to be incompatible with the existence of any organic beings, such as are known to us in the living or fossil world. But when we consider the discoveries recently made of the convertibility of one kind of force into another, and how light, heat, magnetism, electricity and chemical affinity, are intimately connected, we may well hesitate before we accept the theory of the constant diminution, from age to age, of a great source of dynamical and vital power. All reflecting minds are now convinced, says Mr. Gore, that force cannot be annihilated. To define the nature of force has hitherto baffled the metaphysician and natural philosopher; but, assuredly, we are not so far advanced in our knowledge of the system of the universe, as to be entitled to declare that a great dynamical force, like that of heat, is constantly on the wane."

It is believed that light and heat are inseparable from electricity, and are only properties thereof. And it can hardly be supposed that electricity can occupy empty space, or go into nothing, for that would be annihilation. Neither could heat occupy or be contained in a vacuum, where there is no material body. This could easily be demonstrated by philosophical experiments. But as illustrating this point, I will state a fact which must be known to almost every one. We know that in the midst of summer, when we are oppressed with heat down in the valley, by ascending to the summit of a mountain three miles high, we would be in the region of perpetual snow. And if we could ascend perpendicularly in a straight line eight or ten miles towards the sun, we would be at a point where mercury would freeze, and we would perish with cold. Why is it that, as we approach the sun, the cold in-

creases? The reason is that the atmosphere, which is a material body, is the medium through which we receive any benefit from the sun. It is the repository of all the light and heat that come from the sun. And if there were no atmosphere, we should receive no light nor heat from the sun. That is the reason, that, as we ascend from the earth, it becomes colder. The atmosphere becomes lighter and lighter, until if you could pass to the distance of fifty miles above the earth's surface, there would be no air at all, and of course there would be no light nor heat there, because there would be no medium to hold or to contain them. For scientists, therefore, to talk about light and heat going off into empty space where there would be no medium to absorb or to contain them, is simply to make themselves appear ridiculous. But we pass on to notice other objections.

III. A third argument against the Nebular hypothesis is based on the geological structure of the earth's crust. We find it to be composed of many different substances, as various minerals—lead, iron, gold, granite rock, etc., which we know to be possessed of different degrees of susceptibility to the power of heat. Thus, chemists tell us that it would take four times as great a degree of heat to fuse a mass of granite as to melt gold, so that when gold has been converted into a glowing hot gas by the action of heat, the granite will be still in a solid state. Now, we sometimes find gold and other substances in a pure state, imbedded in the solid granite. And the pertinent question is, how they came there, when they must have been a glowing hot gas, when the granite had cooled suffi-

ciently to become solid. How did they get into the granite after it became solid rock? Can they solve the problem?

IV. The fourth argument is, that the law of gravitation, as expounded by Sir Isaac Newton, entirely subverts the Nebular hypothesis. All scientists admit that gravity is one of the essential laws of matter. And we know that, according to this law, the heaviest matter sinks down towards the centre of the earth, and that the lightest is farthest from the centre, or at the surface. But what does this hypothesis teach? It teaches that the lightest matter is at the centre, and that the heaviest is farthest away from it, or at the surface. Here is a perfect state of antagonism to the law of gravity. Now what shall we do in this case? Shall we give up gravity for the new-fangled theory, or shall we still adhere to the old philosophy of Newton?

Several years ago, Sir William Thompson, a distinguished scientist of England, delivered a public lecture, the aim of which was to prove that solid matter is heavier than melted matter; and, therefore, that if the interior of the earth were a mass of melted or fluid matter, as the Nebular theory supposes, the law of gravitation would break up the more solid and heavy matter at the surface, into pieces or fragments, and cause them to sink towards the centre, where they would be instantly melted again by the heat. This was a death-blow, dealt by Sir William to the Nebular theory, as any scholar will at once see.

V. Another argument is founded on the diminishing rate of the increase of the earth's internal heat as the

crust is penetrated. It has been said that because this heat increases as we penetrate downwards towards the centre, this is conclusive evidence in favor of the Nebular theory. And it certainly would be conclusive proof, if it were found that this internal heat increased downward in an increasing ratio. But the very reverse of this is the fact. I shall give you the proof in the words of "The Annual Record of Science and Industry for 1876," edited by S. F. Baird, which says:

"The origin of the interior heat of the earth is treated of in a few words by Prof. Mohr, who states, that, if the interior is still molten, it follows that the nearer we approach this nucleus, not only must the temperature increase, but must do so in an increasing ratio; so that for a given increase of temperature, we require to descend into the earth through a decreasing number of feet. Now the deepest artesian well as yet executed is that at Sperenberg, about twenty (20) miles from Berlin. This well was begun in 1867, and has already reached a depth of over 4,000 feet, at which depth, Magnus measured the temperature by means of his thermometer. The observations of temperature that have been made in this well, were executed with the greatest care; each position of the thermometer being cut off from connection with the upper or lower portions of the well, by plugging up the tube. There results from these measurements a very remarkable, but well-established result, that the rate of increase of temperature is continually growing less as we descend. This increase diminishes at the rate of one-twentieth of a degree for every hundred feet, so that it is easy to compute at what depth the temperature will cease to increase. The depth is found to be the very moderate one of 5,190 feet, at

which a temperature of forty degrees Reaumur might be expected to prevail. Even if we do not attribute absolute accuracy to these observations, yet we see that a constant temperature must be attained at a depth far within twenty miles, and that the temperature itself, even at that depth, must be far less than the melting point of the rocks. The result of these observations at Sperenberg, is, therefore, completely in accordance with that deduced by Vogt, from observations at the artesian well at Grenellè; and if we attribute any value at all to the calculations, they seem to give a death-blow to the Plutonic theory of former geologists."

It is not necessary to make any comment on this passage. For this is real science—knowledge. And it is scarcely to be presumed that any mere opinion or conjecture, especially of any modern scientist, shall be considered as an answer to these positive facts of scientific observation.

VI. The sixth argument is one that concerns the existence of the nebulous matter itself. There is no scientific proof—not the slightest possible proof that there is any such thing in existence, as that which they call the nebulous matter. Here I will give you the explicit and emphatic testimony of some of the most distinguished scientists, who did not draw their conclusions from mythical or fanciful premises. Thus, Sir John Herschel wrote:

"We have every reason to believe, at least, in the generality of cases, that a nebula is nothing more than a cluster of stars."

And Sir David Brewster testified as follows:

"It was certainly a rash generalization to maintain that nebulæ differ essentially from clusters of stars, because existing telescopes could not resolve them. The very first application of Lord Rosse's telescope to the heavens overturned the hypothesis; and with such unequivocal facts as that instrument has brought to light, we regard it as a most unwarrantable assertion, to say that there are in the heavens, any masses of matter, different from solid bodies, composing planetary systems."

And Prof. Nichol, a clear-headed scientist, said:

"The supposed distribution of a self-luminous fluid, in separate patches through the heavens has, beyond all doubt, been proved fallacious, by that most remarkable of telescopic achievements—the resolution of the great nebula in Orion, into a superb cluster of stars; and that this necessitates important changes in previous speculations on cosmogony."

Prof. Nichol had written a work on the "theory of the earth" based on the supposed truth of the nebular theory, which he withdrew from circulation, after he discovered his mistake.

I could give the testimony of Prof. Newcomb, and others to the same effect. But the passages which have been quoted ought to satisfy any candid inquirer.

VII. The seventh and final objection to the Nebular hypothesis is, that it does not, and that it cannot explain, as it was intended to do, the regular circular motions of the heavenly bodies. Any common schoolboy, who has studied the laws of motion, or dynamics, as taught in our seminaries of learning, knows that circular motion can be produced only by the action of two forces, the centripetal and the centrifugal. But

neither of these can be generated by the cooling and contracting process. Richard A. Proctor said in one of his lectures:

"The way in which the planets move is a fact, in itself, that seems to indicate a certain process of evolution, by which they have a particular motion. Now, if you consider the way in which that motion arose, we are first led to the hypothesis of the French astronomer La Place. La Place in his explanation of this motion, had the idea, that there was a great nebulous mass having the sun in the centre, extending on either side far beyond the present breadth of the path of the uttermost planet—that is, a path of 5,000,000,000 miles in diameter, and the nebulous system of La Place extended beyond that. That mass was intensely hot and vaporous, and was rotating, and as the rotating mass contracted, and it began to rotate more rapidly, the result was that a ring was thrown off by centrifugal force."

In the same discourse, he said:

"In time the ring would gradually break up, its parts would gradually amalgamate; many parts would have different rates of motion; and different parts would encounter each other, and in the course of millions of ages, there would be an amalgamation into one mass, having the same direction of motion that the nebulous mass had, and travelling around a centre which was the sun. But as this minor mass went on contracting, it would follow the same law as the original body which gave birth to it. It would go on contracting, and go round more and more rapidly, perhaps, it would throw off other rings which would become satellites. So the earth was formed; she turns on her axis in twenty-four hours in the same direction, while she takes three hundred and sixty-five days in going around the sun. So

it was with Jupiter, and Saturn, and all the planets all in rotation in the same direction. That process would go on until one planet after another were formed. And so it was that the solar economy as we at present know it would arise."

This may not be all perfectly intelligible to every one, but I shall try to make it so. We cannot be mistaken as to some of the more important positions affirmed in the extracts quoted, among which are:

1. That all the bodies which constitute the solar system, as the earth, and Jupiter, and Saturn—the sun himself, and all the planets, were formed, originally, out of the nebulous matter.

2. That the nebulous matter was intensely hot and vaporous.

3. That the mass out of which the present solar system was formed had a diameter of more than 5,000,000,000 miles.

4. That the sun was located in the centre of the mass; that is, according to the supposition, before there was any sun in existence; for the theory was invented to explain how the sun came into existence.

5. That the vast mass of matter, more than 5,000,000,000 miles in diameter, was rotating; but how it began to rotate is not explained.

6. That the rotatory motion was more and more rapid, not uniform and regular. This is contrary to fact. Astronomers tell us that the motions of all the planets are perfectly uniform and regular—not more and more rapid.

7. The cause of the increased rapidity of the planetary motions is twice stated to be the cooling and contracting process.

Now if this is a fair statement of the theory, it is legitimate to point out some of the necessary inferences from it, which show its absurdity in such a light, that all must see it.

I. And the first inference has respect to the expenditure of heat which is constantly going on, throughout the universe. All the masses of matter are constantly contracting or growing less because of the cooling process. The earth has been parting with its heat, and contracting 500,000,000 years more or less, we are required to believe, and it is growing colder and must continue to do so till there shall be no latent heat left, and all life shall become extinct on its surface. And so likewise, the sun is cooling and contracting. And Mr. Proctor thinks that a period will come when the sun will be so cool and solid as to be a habitable globe like our earth; as he says, the earth was once a flaming and brilliant sun. And so all the planets, and stars, and suns are parting with their heat. But what becomes of the heat, or where it all goes, they have never attempted to explain. To say that it is wasted, or that it goes into *vacuum*, is unphilosophical and absurd, as we have already seen.

II. Another general inference from the theory, has respect to the more and more rapid motions of the heavenly bodies caused by the cooling and contracting process, as the professor affirms. This, as before stated, is contrary to astronomical science. But Mr. Proctor says, in these words: "that, as the rotating mass contracted, it began to rotate more and more rapidly"—and again, "it would go on contracting, and go round more rapidly." It is very

certain, that, if the planetary worlds were ever and always contracting, and growing less in size in consequence of the loss of heat, their revolutions would necessarily be more and more rapid. But Prof. Proctor is not quite sure that these celestial bodies are all the time contracting in size; and he is not sure that their revolutions are more and more rapid. The fact or the truth is just the reverse of this. We know that the length of our day is what it was 3,000 years ago. And we know that the length of our year, or the period of the earth's revolution around the sun, is what it was 3,000 years ago—not a minute nor a second less or more. But suppose, that, according to this theory, the earth were always growing less, its revolutions would, of course, be more and more rapid, and it would be impossible to have two successive years, or two successive days exactly of the same length; but the years and the days would be growing shorter all the time. This would be the inevitable consequence. And this alone is an unanswerable argument against the Nebular hypothesis.

III. Another inference from the extracts quoted from Prof. Proctor relates to the "*idea*," which he says that La Place had—he calls it an idea. Well, of course, it was nothing more than an idea—a mere conceit or conjecture. But we should remember that La Place was a French materialist, and every materialist is really an atheist, and can be nothing else. And here, by way of parenthesis, it may be remarked that it is doubtful whether one great invention or discovery in science or the arts, that has proved to be a lasting blessing to mankind, ever emanated from an atheistic brain.

They may talk about evolution. But I do not remember an instance of evolution of that kind. I believe that all the great improvements and discoveries have been originated by devout Christian minds. Copernicus, Galileo, Kepler, Euler, Newton, Locke, Bacon, Columbus and others who have contributed to enlarge the boundaries of human knowledge, were all devout men. I don't know of an exception to this rule, I don't know the name of an atheist who is to be placed on the list of the world's benefactors.

But now, I will return from this digression to the idea which La Place had—and what was it? Well, La Place had the idea that there was a great nebulous mass, more than 5,000,000,000 miles in diameter, and having the sun in the centre, with that mighty nebulous mass travelling or revolving around him. This was the idea. Of course the sun was in existence. But how came the sun in existence? They invented the Nebular hypothesis to explain how the sun and the planets, and the stars came into existence without the aid or help of a Divine Being; but instead of explaining, they just suppose the sun to be in existence, and set him at the beginning, in all his glory in the middle of that great nebulous mass, drawing it and compelling it to travel around him. This was *the idea!* A grand idea, was it not? If Prof. Proctor had said that it was a *dream*, he would have used the proper word to express what it was that La Place had in his mind.

By his course of reasoning, Prof. Proctor makes the sun to be older than our earth. But his theory—the Nebular hypothesis, makes the earth to be older than

the sun. But how the earth can be older than the sun and at the same time, the sun be older than the earth, I don't think there is any one can explain, except the great astronomer who came all the way from London to shed the light of his genius over our western hemisphere.

Any system of philosophy which recognizes no first cause of things, but "the atoms and the empty space," and attempts to account for all things by second causes, must be radically defective, and involve its supporters in contradictions and inconsistencies numberless. If Mon. La Place or his disciple—Prof. Proctor, could have had some almighty and supreme intelligence to form the sun at first, and set him in the centre of that mighty nebula, rotating on his axis in exact periods of twenty-five days, as he now rotates, it would have relieved them of the embarrassment experienced, in getting the planetary worlds into their regular and orderly motions.

But the spirit of David Hume, or some other spirit more powerful than any mortal, has set them so strongly against the doctrine of miracle, that in their fixed determination to leave God out of view, and to have the universe organized and regulated without any intermeddling of God, or of "the gods," they have uttered, as the apostle expresses it, "*profane* and *vain* babblings."

When they shut up the Bible, the only book which can shed a ray of light on the origin of things, they take a leap into the dark, and are like blind men who grope at noon-day, and know not at what they stumble. There have been a few great minds inclined to

atheism who were yet candid enough to admit that there is a realm of knowledge which lies beyond mortal ken. Among those who have been willing to confess the insufficiency of unaided human reason to explore the realms of the unknown, was Fichté, a great German thinker. I will give a brief paragraph from his writings, in which he gives vent to his doubts—his utter hopelessness as to any reliance to be placed on any attainments of the human understanding, and it shows how dark and hopeless is the soul that is without God, and afloat on the dark sea of infidelity. He says:

"The sum total is this: there is absolutely nothing permanent either without me or within me, but only an unceasing change. I know absolutely nothing of any existence, not even my own. I myself know nothing, and am nothing. Images there are—they constitute apparently all that exists, and what they know of themselves, is after the manner of images; images that pass and vanish without there being aught to witness their transitions; that consist in fact, of the images of images without significance and without an aim. I myself am one of these images. All reality is converted into a marvellous dream, without a life to dream of, and without a mind to dream—into a dream made up only of a dream of itself. Perception is a dream. Thought, the source of all the existence, and all the reality which I imagine to myself of my existence, of my power, of my destination, is the dream of that dream."

This, to say the least, is an honest confession of ignorance. Here is a philosopher, one in a thousand, who is candid enough to confess that he could know nothing. But oh, what a confession! It seems to come

like the wailing of a soul that feels itself an orphan. And that is just what every soul is—an orphan—that is without God, and that refuses to look for light and hope, to the Star of Bethlehem.

We have seen what the Nebular Hypothesis is. It is the latest attempt of atheism to account for the existence of the universe without a God—without an almighty and intelligent First Cause, to bring it into existence. According to this theory, the atoms of matter and the empty space are the sole builders of the mighty fabric. There is no supreme and all-wise architect, who contrived and planned the building. The infinite space existed and the infinite matter, as they tell us, and the evolution went on of itself. They never saw any of the atoms or the molecules, but still they kept up their motions, and worked away through the ages, and this glorious universe with all its paraphernalia of sun, moon, and stars, has come into existence as the result of their combined action.

Now, if there is any one prepared to believe this, all that can be said is that he ought not to blame nor to pity the ignorant and benighted follower of Brama, for believing that the universe was hatched from an egg. There were more thousands and millions who believed this old pagan myth than can ever be persuaded of the truth of this evolution theory. Indeed, if I had to choose between the old heathen myth and the modern theory, I should choose the myth of the egg. As it may interest many, we will give you the substance of it from a distinguished author, who spent many years in India, the great missionary, Dr. Alexander Duff, of Scotland. I quote his words:

"Brahm or Brama, the Supreme, produced an egg, in which the elementary principles might be deposited, and nurtured into maturity. All the elementary principles—the seeds of future worlds—that had been evolved from the substance of Brahm, were collected together and deposited in the newly produced egg. And into it along with them entered the self-existent himself, under the assumed form of Brama; and then he sat vivifying, expanding and combining the elements a whole year of the creation, or four thousand and three hundred millions of solar years! During this amazing period, the wondrous egg floated like a bubble on the abyss of primeval waters, increasing in size, and blazing, refulgent as a thousand suns. At length, the Supreme who dwelt therein, burst the shell of the stupendous egg, and issued forth under a new form, with a thousand heads, a thousand eyes, and a thousand arms. Along with him, there issued forth another form, huge and measureless. What could that be? All the elementary principles having now been matured, and disposed into an endless variety of orderly collocations, and combined into one harmonious whole, they darted into visible manifestations under the form of the present glorious universe. A universe now finished and ready made, with its entire apparatus of earth, sun, moon, and stars. What then is this multiform universe? It is but a harmoniously arranged expansion of primordial atoms and principles. And whence are these? *Educed or evolved* from the divine substance of Brahm."

"*Educed or evolved.*" That is the word in the old myth. Of course, that was Evolution. We see that there are striking points of resemblance between the Hindoo myth and the modern theory of Evolution. They both have the universe, as it now exists, by a process of evolution, only in the case of the old myth,

the atoms are enclosed in the egg, along with the body of Brahm, and evolved after a long period, running on 4,300,000,000 years; whereas, the later theory of evolution has the atoms working outside of the egg independently of any god, after they had got warmed they don't know how, and developing themselves into the present system of the universe, after a lapse of ages, which they do not pretend to calculate—but doubtless it was 4,300,000,000 years, the exact period of Brama. And there is every reason to think that modern evolution was derived from the ancient Hindoo theory. Where there are differences between the two theories, they are decidedly in favor of the ancient theory. The inventors of the later theory have certainly made no improvement on the old heathen myth of the egg.

The sum of the whole is this—the universe exists, and we exist. And if they deny the existence of the Supreme Being, who is the author of all, they must account for the existence of things in some other way. And our evolution philosophers, doubtless, have done as well as they knew how.

CHAPTER III.

The Material Building; or, Chemical Composition of the Globe.

Granite the foundation—Granite and oxygen—Composition of water, and the air—A law of chemical affinity—Not developed from heated star-dust—Sixty-three elements of matter—Books composed from twenty-six letters—No new element can be created—No atom can be annihilated—A necessary and logical inference—What the effect would be if the globe were dissolved by heat—Violence of chemical action—Oxygen imprisoned in a block of granite—What Faraday and other philosophers said—Extract from Faraday—Disturbing causes—The upheaval—Volcanic action—Extracts from Encyclopædia Britannica—General principles of volcanic action—Rapidity of volcanic action—Instances—Quotation from Huxley—The coral reefs—What the microscope shows—How new continents were formed by marine animalculæ—Proof that matter is not eternal—Every atom obedient to the laws of matter—No waste in creation—Absurdity of calculations—Exact harmony between nature and revelation.

THE Scriptures teach that "every house is builded by some man, but that He who built all things, is God."—Heb. iii. 4. Here is a comparison between the houses which men build, and the building which God hath erected. The material universe is God's temple. In its structure more than sixty elements, or different materials were requisite. It is known that granite rock is the foundation of the temple. But that is not a simple substance. It is compounded of several different elements, so joined or put together, that the skill of man knows not how to separate them. Oxygen gas, however, is the principal element in the

composition of granite. Scientists admit the fact, though they cannot explain it. It is something wonderful, surpassing our comprehension. There is not much resemblance between oxygen gas and granite rock. But God knew how to combine the materials, out of which He purposed to build His temple. On each and every one of the original elements, He imposed a certain law, or gave it a certain property, by which they unite together in certain exact proportions, and at once the temple is built. There is nothing wanting, and nothing superfluous. Every stone in the temple is in its proper place.

I might continue this mode of argument indefinitely. It is known that oxygen forms more than half the substance of this entire globe. Water, that covers nearly three-fourths of its surface, is composed of oxygen and hydrogen, united in certain proportions. These are impalpable and ethereal substances called gases, but they unite, by the law we call chemical affinity, in certain ascertained proportions, and under a certain temperature, and they are no longer gases, but water. Here is a well-established fact. Now when did this law come into operation? Evidently, when the gases and the law of affinity that unites them, began to exist.

In like manner, we know that the air, or the atmosphere which surrounds this globe, and without which no living animal could exist on its surface, is formed by the union, in certain known proportions, of oxygen and nitrogen. Now, can any one believe that these original elements—the simple gases, oxygen, hydrogen, nitrogen and carbon—were evolved or developed through long ages, from the heated star-dust or nebu-

lous matter? Or that the law of affinity which unites them in exact proportions, was also developed in the same way? This is what modern scientists profess to believe. And yet, the oceans that cover the globe, the firmament that surrounds it, and the solid granite foundations of the earth have been formed out of these simple elements, united together by chemical affinity. The elements are simple, and the law that unites them together is a very simple law, yet who can comprehend or know anything about the mystery? We give names to things that we do not understand. That is all we can do. But modern scientists think they understand, that there was such a thing as the star-dust, or the nebulous matter, in existence from eternity, and that these simple elements and the law that combines them so mysteriously, were all, in the course of billions of years, developed from that heated star-dust!

From these sixty-three original elements of matter, which God created in the beginning, and which He endowed with certain properties, all the millions of wonderful and beautiful forms, existing in sky, earth and sea, have come. It is just as when we look at the alphabet of language and thought, and say, that, from these twenty-six letters are made all the books in the world, that contain the hoarded wisdom and learning of the ages. When we read the book of Job, or the "Pilgrim's Progress," or "Paradise Lost," we do not imagine that the few simple characters from which these and all other books have been written, are self-existent, or eternal, or that they happened into existence by chance. But we feel perfectly assured, that

these letters were made or invented—and for this very purpose, that books might be composed from them.

In like manner, a house is built. The architect must have the plan in his mind, and must arrange the several materials, as the marble, the brick, the wood, the lime, the slate, the iron, the glass, etc., in their proper places, and in the proportions required, so as to secure architectural beauty and fitness. He must know how to make one material fit or join to another, and how to adapt all the parts together, so that it shall be one building, and the unity of design shall be conspicuous throughout. None but a skilled architect can erect such a building. "Every house is builded by some man, but He who built all things is God." Every stone, every block, every timber in that building of God, is in its proper place.

I do not speculate—I assume nothing, when I say, these two things may be taken for granted: first, there is no process known, by which a new or additional atom of matter can be created; and secondly, that there is no process by which a single atom already in existence, can be annihilated or destroyed. And if so, then every atom must be now in existence that was created at first, and every atom must be still controlled by the laws originally instamped upon it.

What is the necessary inference from this? Why, that the elements remaining the same, and the laws that govern them remaining the same, this material globe must be always and forever the same. It is essentially now what it was in the beginning, when the sixty-three elements were created; and it is essentially now what it will be in the final day, when, as the

Scripture says, "the elements shall melt with fervent heat."

If we could suppose that the solid mass of this globe were put into a crucible, or a furnace large enough for the purpose, and then a degree of heat applied sufficient to melt the whole mass, and convert the whole into a heated gas, separating the elements from one another, and causing them to pass off into vaporous matter—if we should suppose this. I ask, would the elements be destroyed or annihilated? By no means. The sixty-three elements would remain still, though separated, and the weight of them, if they could be weighed, would be precisely that of the entire globe before it had been melted—not a single grain more or less. This is not a speculation. If, then, we should suppose those dissolved elements to be restored to their former cold state as suddenly as they had been heated, what would be the effect? Why, the elements all remaining in existence, and the laws of affinity that govern them remaining unchanged, they would instantly recombine, and the globe would be constituted as it was before. The oxygen and minerals that have an affinity, would unite, and the granite foundations of the earth, would be laid again; the oxygen and nitrogen would reunite to form the atmosphere once more, and the oxygen and hydrogen to form the oceans, and every atom would go to its proper place, and the globe would exist again. And this operation would not require to be prolonged through millions or billions of years. It would not even require days. A single day, as in the morning of creation, would be sufficient, when God by His fiat, imposed on the ele-

ments which He had created, the laws of affinity that were to govern them. Immediately, the firmament appeared, and the oceans, and the solid parts of the globe.

Every one who has studied chemistry, knows how suddenly and rapidly the laws of affinity act. If you should accidentally drop a spark into a magazine of powder, you know there would be an explosion. That explosion is caused simply, by breaking up, as the spark does, the law of affinity which kept the atoms together. Let the action be reversed—let the law of affinity be restored, and the particles would instantly reunite to form gunpowder again.

Now we know—every chemist will assure you of this—that the common atmosphere which we breathe, is composed of oxygen, nitrogen, and a very small portion of carbon, united together by the law of affinity. Can you not suppose, that law of affinity might be suddenly suspended, and those elements might be separated, or go off into other compounds, and the atmosphere or the firmament cease to be? Can you not believe, that He who, by his almighty fiat, constituted the law originally, could just as suddenly suspend its operation, say, for ten minutes, when these elements, oxygen, nitrogen, and carbon would leave their present union, and exist separately or alone, and there would be no atmosphere—not a particle of air on this globe for ten minutes, or during the suspension of that law? And do you know what the consequence would be? All animal life would cease. None of us could live without breath for ten minutes, and we could not breathe without air. There would be the oxygen, and

the nitrogen, and the carbon still in existence. But we could not breathe either of those simple gases alone, and life would become extinct on this globe. Now it must be that He who ordained that law at first, could just as easily suspend it for ten minutes, or break up the union forever, if He saw proper.

Our modern scientists would have us believe that the air, which is so necessary to our existence, was self-originated—or formed by the slow process of evolution, running through a duration of millions of years, without a Creator. Believe them, if you can. Believe them, if you would imperil your immortal souls.

They will not be able, by all their efforts, to legislate God out of existence. In due time, He will assert His existence to their dismay and everlasting confusion. There are more mysteries, than they ever dreamed of, in their philosophy. You observe that block of granite weighing a ton, which has been brought from a distance, to go into the foundation of your house. Do you know what it is? The scientist will tell you, that more than half the weight of that solid block, is pure oxygen gas. It is imprisoned—it is locked up in that block by the hand of Omnipotence. If it were suddenly disengaged, there would probably be something like an explosion, and instead of occupying the space of two or three cubic feet, it would expand, and fill instantly the space of half a cubic mile.

If I hold this book suspended in the empty space, you say that it is my hand by which it is suspended in air. But I say that it is my will. It is just so, this universe is suspended on the will of God. If He should withdraw His upholding power—if He should annul

that mysterious principle or law of affinity, that controls the sixty-three elements of matter, forming all the beautiful and compound bodies on this globe—if He should destroy that principle, we should all drop into non-existence in a moment.

There is the principle of cohesive attraction—that makes the atoms of matter that have a certain affinity, cohere so as to form solid bodies. And if it were not for that law, there could be no large body. I could not raise this book with my hand. The millions of particles of which it is composed, would no more cohere than the particles of dust or sand, and, in fact, it would not be a book.

Faraday—that prince among chemists, and a devout Christian, came to believe that all force is will-force, and that the material universe is not merely dependent on, but, in every part of it, actuated by the will of the Supreme Being. Sir John Herschel said:

"It is but reasonable to regard the force of gravitation, as the direct or the indirect result of a will or consciousness, existing somewhere."

Prof. William Whewell, the great mathematician, said:

"The agency of the Divine Being pervades every portion of the universe, producing all action and passion—all permanence and change!"

Dr. William Carpenter, President of the B. Association for the Advancement of Science, said:

"When science, passing beyond its own limit, assumes to take the place of theology, and set up its

own conception of the order of nature as a sufficient account of its cause, it is invading a province of thought to which it has no claim. To set up these laws as self-acting, and as either excluding or rendering unnecessary the power which alone can give them effect, appears to me, as arrogant as it is unphilosophical."

"*Arrogant*" and "*unphilosophical!*" That is a just rebuke, that ought to come home to every blaspheming materialist.

The names of these philosophers whose words I have quoted, stand among the first in the world of science. It takes but little reflection for any one to understand that the laws of matter could not have come into action, by a slow and evolutionary process, requiring the lapse of infinite ages. It was a chemical process, and the action must have been immediate, and perfect at once. All that was necessary, was the decree of the Almighty, which ordained the laws of chemical affinity, which were permanent, and have remained unchanged, obedient to that decree. If He had not spoken the word ordaining those laws, the star-dust would have been star-dust still, though ages on ages had rolled away.

The humble believer in revelation may comprehend how this must be so. But I would be hopeless of the task of trying to make a materialist believe it. And yet, there is no honest or candid mind, that will not, at once, endorse the sentiments contained in the extract which I here give, as expressing the views of one of the greatest scientists of this or of any age. He says:

"From within the limits of this narrow range of only sixty-three elements, has Omnipotence selected the materials which compose our globe, and the living beings which inhabit it. Out of these all the diversified forms and beings of the world are made. From the dense masses of mountains and rocks amongst inanimate things, to the fleeting atmosphere which surrounds us—from the simpler forms of animal or vegetable life to the most highly organized, however different one from another in aspect or in functions—they have all been created out of these elements in the sixty-three. Nor is this all. By a wonderful power of adaptation which bespeaks Omnipotence, our earth and its inhabitants are not made up of sixty-three bodies equally distributed, but by far the greatest portion of terrestrial matter is composed of the thirteen non-metallic elements; and yet more strange, as may be demonstrated, about two-thirds of the whole material universe, organic and inorganic, are composed of one alone of these non-metallic elements—*Oxygen*. How great then must be the power of adaptation imposed on these elements, by which they are made to appear under so many different forms!

"As the non-metallic elements constitute so large a portion of the material world, entering into such numerous forms, appearing under such protean aspects, ministering to purposes so dissimilar and opposed, it is evident they must be endowed with wonderful adaptive powers. These powers are manifested in different ways; their study constitutes an interesting portion of chemical science, and displays some of the most interesting phenomena. But higher contemplations than those of mere chemical science, are suggested by the investigation of these properties—objects of greater interest present themselves than the deduction of laws, or the perfection of systems. An investigation of the distinctive properties of chemical

elements, unfolds to us the mysterious, yet simple means chosen by the Omnipotent for accomplishing His results, teaching us how elements, seemingly the most unmanageable and disaccordant, are made to watch like ministering angels around us—each performing tranquilly its distinct function—moving through all the varying phases of decomposition, decay, and death—and then, springing into new life, assuming new forms, resting in passive inactivity, or assuming the extreme of violence, according as either may be selected to accomplish the appointed end."

No one is greater, as a scientist, than Faraday, who uttered these words. He sees a wonderful adaptation of the elements of matter to the results to be secured. He sees laws or powers imposed on these elements—not originally inherent in them—such as to bespeak omnipotence.

I have said that the compound substances which constitute the surface of the globe, have undergone, and that they do undergo great changes. This is owing to active agencies in operation, which cause their disintegration, and interfere with the laws of affinity. This is what has perplexed certain men of science. They seem not to understand the causes, or the nature of these changes. Some of them theorize, and speculate very wildly on the subject, while others are candid enough to acknowledge, that the whole matter is involved in impenetrable mystery. Cuvier said:

"It is vain to look for forces now acting on the surface of the globe, powerful enough to produce the revolutions and catastrophes of which it bears the traces."

One of the causes which changed the earth's surface,

was the cataclysm or convulsion in a prehistoric age, when the upheaval of the present continents took place, and sea and land changed places. This great and now admitted fact, will be more definitely and largely insisted on in the next chapter. That accounts for the existence of shells and other marine fossils, and the formation of the beds of sand-stone, lime-stone, and coal, found in different places in the earth's crust. It also accounts for the bowlders and drifts, which the glacial theory was invented to explain, but which it does not and cannot explain.

Another cause, which contributed very much to produce the changed physical aspect of our globe, was the influence of volcanic action which, I may say, has been nearly universal in prehistoric ages. This agency is beginning to be seen and appreciated in our times, in a manner that it never was before. At a late meeting of the B. Association for the Promotion of Science, Sir John Lubbock assumed for the history of man on the earth, a period of two hundred thousand years. But he was promptly checked by no less a man than Prof. Huxley, who, as reported by the London *Times*, said:

"He wished to give anthropologists a necessary caution. The question as to the exact time to be attached to alluvial remains in the Somme Valley, could not be settled satisfactorily. Few persons, except men of science, were aware that there had been enormous changes in the last five hundred years in the North of Europe. The volcanoes of Iceland had been continually active; great floods of lava had been poured forth, and the level of the coast had been most remarkably changed. Similar causes might have pro-

duced enormous changes in the valley of the Somme; and therefore, any arguments based as to time, upon the appearance of the valley, were not to be trusted."

At a meeting of the National Academy in Columbia College in New York, Prof. Scudder, of Harvard, read a paper by Prof. Joseph Leconte, of Oakland, Cal., showing that the higher parts of the country in California, were once covered with lava, and that the river valleys have been worn or cut down through the strata of lava since they were deposited. This proves that after the upheaval of the continent, the volcanoes went into action, and began to do their work. How long this volcanic action continued, is a matter that belongs to prehistoric times.

There is no proposition better established than that in the past ages, the action of volcanoes was far greater than at present, and that nearly the entire surface of the earth has been modified thereby. In the Encyclopædia Britannica, we read:

"Scarcely any part of the globe is without signs of the former action of volcanic fires, and although the loosely constructed cones of eruption have been swept away, and the solid crater foundations broken and wasted, enough remains to attest their existence and activity in every age of the earth's history."

Again, I quote:

"About 400 volcanic mountains are known to exist in various parts of the earth. Humboldt makes the number 407, of which the total number now active is only 225. This does not include volcanoes that may have existed and become extinct thousands of years ago, before historic times began."

Again, the Encyclopædia says:

"It is admitted by all who have speculated on the causes of volcanic action, that proximity to the sea is one of the necessary conditions for its manifestation. That the sea-water finds access to the foci of volcanoes is rendered, at least, probable, by the numerous quantities of vapors always discharged, and by the extraordinary torrents which sometimes accompany them."

And again:

"The map of volcanoes and geological map of the world, in K. Johnston's atlas, exhibits remains of ancient volcanoes deep in the interior of continents, and far removed from present sea-shores. Such are Fisher's Peak in Arkansas, and Ararat in the Old World; the Ural, Altai and Himalaya are accompanied by volcanic ranges, and there are many scattered centres of igneous action in Australia. Wherever their forms are distinct, they seem to beacon the old sea margins of the former world, at various stages of its history, and the signs observed in the Thian Schan may, perhaps, be the last sparks (maintained by salt lakes of the Tartarean steppes) lighted up by the shores of a great inland sea."

Once more, I quote:

"It was suggested by Sir Humphrey Davy, that if the interior of the earth contained large quantities of the unoxydated metalloids, all the phenomena of volcanoes might be occasioned by the penetration of sea-water through deep fissures; and this hypothesis has been entertained, with some modifications, by Dr. Daubeney and other chemists. There is no question that water plays a most important part in volcanic processes, or that elastic vapors supply the principal motive force of upheavals and eruptions also."

These extracts which I have given from the Encyclopædia Britannica, throw much light on the whole subject of volcanic action. I do not call into question any of the facts. But it is on these facts and observations from some of the most eminent investigators, that, as a foundation, aided by my own personal observations, I shall endeavor to construct the true physical theory of the aspect of our globe, so far as that has been changed and modified by volcanic action.

The general principles of volcanic action, as enunciated in the extracts quoted from the Encyclopædia, and abundantly confirmed by other authors, and in other works, may be summed up as follows:

1. The surface of the earth has been modified or changed by volcanoes, in past ages, to an unknown extent.

2. This action has been greater and more general in the past than in our own times.

3. Proximity to seas or coasts, is one of the essential conditions of volcanic action.

4. The interior of continents that are now remote from seas, have been subject to this action in prehistoric times.

Now, let us consider briefly these four important facts in the history of volcanoes. Scientists assert that our globe is millions of years old, and that man has existed on the surface of the earth for two hundred thousand years, at the lowest calculation. But the true theory of volcanic action is utterly irreconcilable with these assumptions. The period of five hundred years is but a point of time, as compared with two hundred thousand years. And yet, Prof. Huxley asserted,

by way of caution to anthropologists, that "enormous changes" have occurred in the north of Europe during the last five hundred years, so that it is impossible to settle, satisfactorily, the time to be attached to any alluvial remains. Now, if this could be truthfully said, in reference to the changes of five hundred years, what might be said of the changes of five thousand years, or, since the general upheaval of the continents, when the volcanoes first went into action?

It is, simply, self-conceited arrogance that leads any to formulate opinions on such matters, and put them forward as scientific statements. The caution suggested by Huxley, and by Prof. Guyot on a similar occasion, was timely.

According to the extracts before given, from the Encyclopædia Britannica, there is scarcely any part of the globe that is without signs of former volcanic action. An observant traveler on any part of our North American continent, must notice these signs. The site on which St. Louis is built, was the scene of volcanic desolations in some prehistoric age, probably just after the upheaval of the continent. Along the Ozark ranges in Arkansas, the remains of ancient volcanoes are everywhere visible. There are numerous elevations and depressions, which the nature of the surrounding strata show to have been caused by volcanoes. They all, however, took place in prehistoric times. The latest sign of such action was that which occurred in 1811, in the vicinity of New Madrid, Mo. There was no outburst of a volcano, it is true—no crater formed, nor lava ejected. But there are inhabitants still living in the neighborhood, who say that a fissure

was made in the earth, and that a portion of the country was sunk many feet below its former level, which now forms a lake. They call it "*the sunk land.*" There are those who testify also, that the Mississippi, at the same time and place, was terribly agitated, and for some minutes flowed up stream. This is perfectly credible, and just what must have happened, on the supposition that a portion of the river-bed was sunk below its former level. The water, both above and below, would flow to the sunken part, till the level of the water surface was restored.

The rapidity and extent of volcanic action, in changing the earth's surface, cannot be so well conceived or explained, as by giving a few facts, by way of illustration. About a century ago, a volcano broke forth from the sea, in the vicinity of Iceland, which, in a short time, formed an island of solid lava, 500 square miles in extent. Another eruption poured a stream of lava ninety miles long, from seven to twelve wide —which, in its course, filled a chasm 650 feet deep. A mountain in Japan was formed, 11,000 feet in height, by a single eruption. In the Hawaiian archipelago, a single stream of lava three to nine miles in width, flowed a distance of seventy miles, filling the sea where it was 800 feet in depth.

These are recent events. But they serve to show the extent, and the rapidity of the changes effected by volcanoes in the last 4,500 years, when they were brought into action, at the epoch when the mountain upheavals took place, as shown by several geologists, and especially by the great French geologist, Elie Beaumont. He states that, when the Andes range

of mountains were elevated, 270 of the principal volcanoes now active, burst forth simultaneously, or at the same time. And he adds:

"The agitation of the waters of the ocean, caused by this convulsion"—notice, he says, it was a convulsion—"probably, occasioned that transient and general deluge, which is noticed in the traditions of so many nations."

Now we are to bear in mind that Beaumont was not a Christian; but he was a geologist. And he is endorsed by all the most eminent geologists of our day. Agassiz said of him: "Next to Von Buch, no man has done more for geology than Beaumont, the French geologist."

Therefore, geology teaches that the volcanoes went into action simultaneously, when the mountains were upheaved, at the date of the Noachic deluge, less than 5,000 years ago. We see what a satisfactory account this is, as to the general prevalence of volcanoes in the interior of our continents, at an early age, or just after the epoch of the flood. When the earth was convulsed, and its granite foundations broken, as they were at that time, of course, the water and the air would rush into the great cracks and fissures, that were then made, and ignite the unoxydated metalloids, as Sir Humphrey Davy suggested. And these subterranean fires would burn till the fuel was exhausted, or till there was nothing more to keep the flames alive. The most of these fires have already burned out, and the rest will burn out in the course of time.

Let no one hastily conclude that I have been giving

vent to my own opinions and vain speculations. I am stating the facts of geology, as those facts have been brought to light by the most eminent geologists. Even Huxley said in his New York lectures:

"It is perfectly certain that at a comparatively recent period of the world's history, that epoch which is written on the chart as the cretaceous epoch—it is perfectly certain that at that time, none of the great physical features which at present mark the surface of the globe existed. It is certain that the Rocky mountains were not. It is certain that the Himalaya mountains were not. It is certain that the Alps and the Pyrenees had no existence. The evidence of the simplest possible character, is simply this: we find raised up on the crags of these mountains, elevated by the forces of upheaval which have given rise to them, masses of cretaceous rock which formed the bottom of the sea before those mountains existed."

This is what Huxley said. The sum of it is this: the cretaceous rock was formed at the bottom of the antediluvian seas; as they tell us that cretaceous rock is now forming at the bottom of the Atlantic ocean. And the cretaceous rock marks the latest geological period—the period that preceded the advent of man on the stage of action. And then the mountain upheavals took place, and this must have been at the date of the flood, as Beaumont has shown.

Thus we see how it is that God has been pleased to make use of these materialists, to corroborate and confirm the truth of every word of the Mosaic record. Our modern physicists have stumbled on the theory of evolution, as a solution of the problem of the

physical aspect of the globe. And evolution is progressive, requiring the lapse of æons upon æons, and ages on ages, for the accomplishment of the various changes which they have noticed, in the geological structure of the earth. And it has become a habit with some of them, to talk of millions, and even billions of years, as if they really had some clear conception of the thing, or the idea which they attempt to set forth in their grandiloquent phrases.

One of them had a calculation, that a period of 150,000 years must have elapsed while the coral insects were engaged in rearing the coral reefs off the coast of Florida. But another scientist, equally worthy of credit, comes on the stage, and says, that corals build only where limestone, and comparatively shoal water are found; also, that in the Indian ocean, reefs have been built recently, twenty-seven feet in a single year —and this would make 27,000 feet in a thousand years. And it is on such evidence, that we are asked to believe in the immense antiquity of our world.

The truth is, sceptical scientists exhibit, in every step of their reasonings, an unaccountable ignorance of the secondary causes, or the laws by which the Creator works in the fulfilment of His designs. They never study the Bible. But Moses wrote these significant words: "God created great whales and every living creature that moveth, which the waters brought forth abundantly, after their kind. And God blessed them, saying, Be fruitful and multiply, and fill the waters in the seas." They don't understand it; and it is not certain that any of us fully comprehend the import of these words. But, I think, the meaning of them will, ere long, be made manifest.

The microscope shows that almost every drop in the ocean has its myriads of inhabitants. They build continents and islands. Marine animalculæ, having silicious shells wonderfully and beautifully wrought, though invisible to the naked eye, of which it would take more than a million to make a cubic inch, exist and move rapidly through the watery drop, which forms their ocean. And there are other species having silicious shells, of which it would take more than ten millions to fill a cubic inch of space. Yet, it was thought, before the discovery of the microscope, that there was scarcely any life in the deep, deep sea. But where soundings were made for the Atlantic cable, infusorial remains were discovered, which proved, on examination, to have been forming a deposit like the blue clay and chalk of England. A late writer says, significantly:

"In sounding for the French cable, at the depth of 2,435 feet, chalk and mud was found; the water at great depth contained an excess of carbonic acid; and dissolved organic matter extended to the greatest depth; and all the marine invertebrate animals were represented there—a dentalium, a crustacean, annelids and zephyrea, crinoids, echinoderm, hydroid zoöphytes and foraminifera, with abundance of vitreous sponges."

Yes, countless myriads of such insignificant but wonderful architects work for God, and do His bidding. But the materialist does not understand the Mosaic record. In the antediluvian seas, these builders constructed the shell limestones from which we build our houses to-day. This is the ordinary method by which the Omnipotent works out His purposes. When He

would punish a nation for their wickedness, He often sends the army worm, or the swarms of locusts and grasshoppers, which in a night, destroy the labors of the year; as in old time, when He showed His power unto the proud monarch of Egypt.

So, when He filled the seas with these myriads of insignificant creatures, and commanded them to multiply, and fill the waters in the seas, He looked forward to the time, when He would have to destroy the old world, because of their wickedness, and these little workers wrought through the antediluvian ages, silently, but effectually in the depths of the ocean, to build another continent as a habitation for man, and to prepare a new world for the generations, who were to live in the after ages. "Great and marvellous are thy works, O God."

Any scientist, I think, would admit, that, but for the living and dying process that went on for centuries in the seas, and the decay of animal and vegetable matter, to which this process gave rise, there would have been no soils nor alluviums capable of sustaining vegetation on our present habitable earth. They have testified as we have before seen, that these continents on which we are living, were formerly ocean beds upheaved at a recent geological date. If they had been only bare granite rock, when upheaved, they could never have become the abodes of life and activity, as they now are. Therefore, He who seeth the end from the beginning, saw fit to fill the ocean with myriads of living creatures, whose debris paved the ocean-beds for near two thousand years, which, decaying and mingling with the detritus of the primitive rocks, and

then carried by ocean currents around the globe, constitute the soils on which all our vegetation depends.

Having thus, aided by the light which science lends, presented a view of the physical structure of the globe, with the causes which have, mainly, contributed to bring about its present physical aspect, I will state several inferences and conclude.

I. In the first place, then, it is most manifest that matter cannot be eternal. It is one of the assumptions of materialists that matter is uncreated, self-existent, and eternal. It is, therefore, their deity—their god, as they know no other. But if, as we have seen, there are sixty-three kinds of matter, or simple elements, each of them having their affinities, by which they combine and unite together, forming various compound substances, as air, water, granite rock, etc., then, if they existed from eternity, and possessed these properties from eternity, there must have been air, water, granite, etc., from eternity, and this globe must have existed from eternity as it now is. But this is a proposition which, I do not think, that even a modern scientist would be willing to accept.

II. The globe, notwithstanding all the changes through which it has passed, has not been diminished nor increased in size or bulk. The indestructibility of matter is an axiom in physics. And I may add, that, an atom of matter is just as uncreateable, as it is indestructible—that is to say, a new particle of matter can no more be brought into existence, than an atom already in existence can be destroyed, without the power of Him who created it at the first. Therefore, this globe retains the size and weight, imparted to it

in the morn of creation. It has lost nothing—it has gained nothing. There are constant changes going on. Old affinities may be broken up, but new ones will be formed. Every element, and even every atom has its special mission, and their missions they will perform. The particle of moisture that glistens, in the early morn, as a dewdrop on some beautiful flower, may once have trembled as a tear in some weeping eye, or sparkled in the sunlight on the crest of an ocean wave, or been crystallized into a beautiful snow-flake lighting down on some alpine summit, or, it may be, passed into the life-current that has beat at some breaking heart. I say that all the elements are obedient to the will of God, and to the mission which He has assigned them in the economy of the universe. How admirable, how glorious is this economy! There is a constant equilibrium maintained. You see the ocean is always sending up its watery vapors. But the ocean is always full. The vapors go up in clouds, and descend in rain, and are poured into the ocean again. It is just so with the atmosphere. It goes from the south to the north, and from the north to the south, but it is never exhausted. Not a particle is ever wasted. It circulates, and circulates, and heaves the lungs of man and beast the world over, but it never tires of its mission, and not a particle is ever wasted. It is just so with the electric current. It travels faster and travels farther than the water or the air, because it has a higher mission to perform. It is the most active agency known to man. Without it, there could be no life, and no system of vegetation. It comes from the sun. For scientists say, that the sun is the source of

all electricity. And, of course, it must go back to the sun. For, like the water and the air, it is always circulating. It must return to the sun, as, if it did not, the earth, and the ocean, and every thing, would soon become surcharged with the electric matter, and in time, the sun himself would lose all his energy. There is a mutual attraction between the earth and the sun. And, doubtless, this electric matter is the medium of this mutual attraction. It is forever circulating, though we know but little about it. We know not how the vital current in our mortal frames circulates one way, from the heart through the veins, to nourish the whole body, and returns another way to the heart, through the arterial system. But we know the fact. There is a constant circulation kept up. There is adaptation visible everywhere. I repeat it, this is the economy of the universe, and nothing is ever wasted or lost.

III. In the third place, I would say, that, in view of the facts before us, the attempt at exact calculations, as to the immense age of this world, and the time of man's existence upon it, must seem like the vagaries of a wandering intellect. If the sea and land changed places at the epoch of the upheaval, and that is a fact, not a mere speculation; if, since that epoch, man's habitation has been on the new continents formed for him in the ocean depths; and, if, with all their attainments, the knowledge of this greatest and most stupendous fact in the history of the earth, has been hidden from them till within the last quarter of a century, then, I ask what confidence can be placed in their crude speculations? Further, if the whole surface of the earth has been exposed to the action of volcanoes

to an unknown extent, which is a well-attested fact; moreover, if the matter composing the solid and fluid portions of the earth have been, and are arranged and combined by certain known chemical laws, which are not progressive, but immediate in their operation, which is a scientific fact that every chemist will attest; and lastly, if, as we know was the case, life and death reigned in the seas, in countless forms, for two thousand years, or during the antediluvian age, then, we can safely determine, that the period of *six thousand years* is sufficient to account for the phenomena, which the surface of the earth, now, everywhere presents.

The billions of years, and the æons upon æons, of which they speak so fluently in all their discourses, may serve for entertainment to the deceived crowds who listen to them. But there are no data—not a solitary fact in all the arcana of nature, to serve as a foundation for such calculations. When Richard A. Proctor declared, as he did in one of his lectures in New York, that, "we have 450,000,000 years since the earth was a nebulous mass, and, in round numbers, may declare 500,000,000 years the age of our planet," he certainly knew that it was a mere guess with him whether the earth had ever been a *nebulous mass;* and if he knew anything of the chemical action and affinities of all matter, he must have known that it never could have been a nebulous mass at all. But one thing he did certainly know; and that is, that there are always those in the world, who, like the Athenians of old, are desirous to hear something new, and who will pay their money to those who excel in the faculty of saying strange and marvellous things.

IV. Finally, I have to say, that, the true theory of the physical aspect of the globe, as understood both by revelation and scientific observation, is calculated deeply to impress reverential minds with a sense, both of the wisdom and the power of God. "He spake, and it was done; He commanded, and it stood fast." "When He uttereth His voice, there is a multitude of waters in the heavens, and He causeth the vapors to ascend from the ends of the earth. He maketh the lightnings with rain, and bringeth forth the wind out of His treasures. He is the former of all things; the *Lord of Hosts* is His name."

The two volumes of nature and revelation are complete; and the one confirms and proves the other. There is no conflict between them. The characters inscribed on the pages of the book of nature, are as real, as those written on the pages of Revelation. The Divine Author originated the characters, and then made the book. He created the matter—the several kinds of matter—just the number and the kinds of matter necessary for the work He was about to make. He gave to every atom of matter, the law by which it would assimilate or combine with other atoms, to form air, water, rock, diamonds, flowers, coral, and all the countless and beautiful forms of things, that now exist. He made the whole alphabet of nature's book; and unless He had given to every letter in that alphabet, its own particular character or property, the star-dust would have been star-dust, no matter how the ages had rolled.

Let the inflated scientist exalt himself on the pinnacles of the sciences, and speculate concerning the

cooling and contracting mass of the sun's body, will that glorious luminary move either slower or faster on his axis, as, on their theory, he ought to do? Not one jot or tittle. No more can he, by speculating about matter, cause a single atom to return to its original state, or to occupy any other position in the material universe, than that which the Creator has assigned to it. Every atom which God originally made, is obedient to the laws which He inscribed thereon. If any thing in the universe is out of its place, it is man. Man alone was endowed with a free will, and man does as he pleases; and, therefore, man has got out of his proper place.

CHAPTER IV.

The Universal Deluge; and How the Surface of the Globe was Changed.

There was a universal deluge—Three arguments—1st, the Bible—"I will destroy them with the earth"—"All the fountains of the great deep were broken up"—"Overflown with a flood"—"Overflowed with water, perished"—The sea changed its place—2d, Universal Tradition—The Chaldaic—The Chinese—Man must have lived before the flood—Necessary inference of Humboldt—3d, Facts of Geology—Philosophic argument, not water enough—Natural causes did not produce the change—Words of Cuvier—Of Agassiz—Only alternative, a supernatural cause—Testimony of Dr. Dawson—Of Prof. Marsh, of Yale—Of Prof. Owen, of London—The upheavals on opposite sides of the globe, simultaneous—Occurred at the date of the flood—Age of the great rivers—The Mississippi—The Nile—The Niagara—A universal fact—Another curious fact—Wonderful incident mentioned by Darwin—Two objections considered—Size of the ark—That only a small part of the earth was inhabited—What an old man said—Pitcairn's island—A mathematical calculation by Euler—Three important reasons.

THE proposition which I undertake, in this chapter, to prove, is that there was a Universal Deluge, caused in a miraculous manner, by the sea changing its place just about the date, or the epoch recorded by Moses. There are three separate and independent arguments, on which I rest this conclusion—the argument from the Scriptures, the argument from universal tradition, and lastly the argument which, we shall see, is furnished by the undoubted facts of geological science. And these arguments, each of which, singly and alone, I think to be absolutely conclusive, when

taken together, lay a foundation for belief which is irresistible.

I. My first argument in order, is founded on the evidence furnished by the Bible. I place this first in the order of arrangement, not because it is more convincing than either of the other branches of evidence, but simply because it is, or, at least, it ought to be of the highest authority with all classes. I do not think we ought to entertain any important belief on any subject, which is not countenanced and supported, directly or indirectly, by the Bible. If that rule were adhered to, there would not be much danger of falling into fatal and delusive heresies in theology or science. The doctrine of the universality of the flood, and its causation by the upheaval of the present continents from the ocean depths, was suggested to my mind by the study of the Scriptures, long before geologists had any thing to say on the subject, and even before geology was taught as a science.

1. My first Bible proof is the passage in Gen. vi. 13. "And God said unto Noah, the end of all flesh is come before me; for the earth is filled with violence through them; and behold, I will destroy them *with the earth*." What God here complains of, is that the earth had been polluted—that the earth had been filled with violence through or by them. And then He says, that He "will destroy them with the earth;" meaning that He would destroy them and the earth—that He would destroy them who had polluted the earth, by thus filling it with violence—and that He would destroy, with them, that earth itself, which had been thus filled with violence, and stained with blood. This is clearly

the import of the words. And therefore, when their lifeless forms sank beneath the waters of the flood, that land which they had saturated with fraternal blood, sank with them, and neither they nor that land have ever emerged from that watery grave.

2. My next Bible proof is in Gen. vii. 11, which reads: "In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened." Here the expression—"the great deep"—must signify, *the ocean*. And by the phrase, "the fountains of the great deep were broken up," we are to understand, that the ocean beds were broken up, or heaved up; for that is what happened on that day.

Geologists tell us that all these continents on which we are now living, were once ocean beds, and that in some prehistoric age, they were suddenly upheaved by some great convulsion. But they ignore the account of Moses, who explains all the circumstances, and also explains when the mighty convulsion occurred.

3. My third Scriptural proof is in the book of Job; concerning which, it is the expressed opinion of some, that Moses is the author. But this is not certainly known. But whether he was or was not the author, it was written at an early date in the world's history, and certainly by one who was inspired. The passage in Job to which I refer is in the 22d. chapter: "Is not God in the highest heaven? And behold the height of the stars, how high they are! And thou sayest, how doth God know? Can He judge through the dark clouds? Thick clouds are a covering to Him,

that He seeth not, and He walketh through the circuit of heaven. Hast thou marked the old way, which wicked men have trodden, which were cut down out of time, whose foundation was overflown with a flood, which said unto God depart from us; and what can the Almighty do for them?"

This passage contains, manifestly, a reference to the antediluvian earth—"hast thou marked the old way?" —hast thou seen, or known, or observed "the old way—the old places or habitations, where wicked men have trodden, which were cut down out of time, whose foundation was overflown with a flood?" This is truly a wonderful record. But as this is one of the very oldest writings in the world, it is not surprising that it should contain a direct allusion to that ancient overflow, an event which must then have been fresh in the traditions of all.

The inspired writer is speaking of man's ignorance as compared with God's Omniscience, and he means to say that no human eye had ever marked or observed the places or habitations which wicked men had trodden, which had been overflowed by the flood—that they had been sunk out of sight forever. Their foundation—the old way, where they had walked, had been overflown. It is beneath the waves of the deep, and thou canst not mark it. Their dwelling-place has not been discovered. Not a fossil bone of those wicked men that lived before the flood has ever been discovered, by the most diligent researches of palæontologists, because they are covered beneath the waves of the sea. And they will not be discovered till the sea shall give up its dead at the sound of Gabriel's trump.

4. The last proof from the Bible to show the perpetual destruction of the ancient earth, is that remarkable passage in the last chapter of the 2d. Epistle of Peter: "For this they willingly are ignorant of, that by the word of God, the heavens were of old, and the earth standing out of the water, and in the water, whereby the world that then was, being overflowed with water, perished. But the heavens and the earth which are now, by the same word are kept in store, reserved unto fire against the day of judgment, and perdition of ungodly men." This passage is conclusive. Peter says, "the world which then was, being overflowed with water, perished." The word "*perished*," cannot mean a temporary washing with water, but existing still, after having been *washed*. The word means *to die—to expire—to cease from being—to be destroyed*. In every passage in the Bible where the word occurs, we find this to be the meaning. Thus, in John iii. 16, it is said, "God so loved the world that He gave His only begotten Son, that whosoever believeth in Him should not perish,"—or die eternally—"but might have everlasting life." Again we read—"And when they"—the devils—"were cast out, they went into the herd of swine, and behold, the whole herd of swine ran violently down a steep place into the sea, and perished in the waters." That was not a temporary immersion, but a permanent destruction. They were drowned in the depths of the sea, and never came to life again.

Again, Jesus said: "No man putteth new wine into old bottles, else the bottles perish, and the wine be spilled," etc., where the meaning is, that the bottles

burst—are destroyed—and become useless forever. It is not necessary to multiply passages. I will cite but one other text. Jesus said, Mat. v. 29: "And if thy right eye offend thee, pluck it out and cast it from thee; for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell." If the right eye should be plucked out and cast away, of course, that would be a total loss—a perpetual destruction of the eye. And that is the only meaning that belongs to the word "*perished*," as used in the Scriptures.

Therefore, when Peter says of the old world—or the world which was then inhabited, that, being overflowed with water, it perished, he means that it sunk to rise no more—he means that it was to be inhabited no more forever—that it was destroyed and blotted out because of the pollution of sin. If water could take away the guilt of sin, that drowned world might have emerged again from the waves, and been inhabited once more, a regenerated and purified earth. But that could not be. God had said that the earth was corrupt before Him. It was abominable in His sight, because filled with violence, and He resolved to destroy them and the earth together. This is the teaching of the Scriptures.

We are living, to-day, on the earth originally created "in the water," or under the water—the ancient sea-bottom, which had not been polluted or corrupted by sin. There is not a geologist who will not tell us that all these lands where we live, were once ocean-beds. Therefore, as Cuvier said, the sea and land have changed places. The corrupt antediluvian earth was not only destroyed, but destroyed forever.

II. I come now to my second argument, founded on universal tradition. But there is no necessity that I shall dwell on this branch of the evidence. I must, however, state the argument, as it is so entirely corroborative of the Bible argument.

There is not a tribe or a nation of people known on the face of the earth, which has not preserved some tradition of the universal deluge, that happened in some past age of the earth's history. There is such a tradition among the Chinese; among the Hindoos; among the Persians; among the Chaldeans; among the Egyptians; among the Greeks; among the Mexicans; and among the several tribes of American Indians. I shall here reproduce only two of these traditions as they have come down to us, merely as specimens of the rest. The Chaldaic or Babylonish tradition as recorded by Berosus, their oldest historian, reads thus:

"Xisuthrus was warned by Saturn in a dream, that all mankind would be destroyed shortly by a deluge of rain. He was bidden to bury in the city of *Siphara* or Sepharvaim, such written documents as existed, and then to build a huge vessel or ark, in length five furlongs and two furlongs in width, wherein was to be placed good store of provisions, together with winged fowl and four-footed beasts of the earth, and in which he was himself to embark, with his wife and children, and close friends. Xisuthrus did accordingly, and the flood came at the appointed time. The ark drifted towards Armenia, and Xisuthrus on the third day after the rain abated, sent out from the ark a bird, which, after flying for a while over the illimitable sea of waters, and finding neither food, nor a spot on

which it could settle, returned to him. Some days later Xisuthrus sent out another bird, which likewise returned, but with feet covered with mud. Sent out a third time, the bird returned no more, and Xisuthrus knew that the earth had reappeared. So he removed some of the covering of the ark, and looked, and behold, the vessel had grounded upon a high mountain, and remained fixed."

This is the Chaldaic tradition. The Chinese reads as follows:

"There was a first heaven—an age of innocence, when the whole creation enjoyed a state of perfect happiness; when every thing was beautiful, every thing was good; all things were perfect in their kind; whereto succeeded a second heaven, introduced by a great convulsion. The pillars of heaven were broken; the earth shook to its foundations; the heavens sunk lower towards the north; the sun, the moon and the stars changed their motions—the earth fell to pieces, and the waters inclosed within its bosom, burst forth with violence, and overflowed it. Man having rebelled against heaven, the system of the universe was totally disordered. The sun was eclipsed, the planets altered their courses, and the grand harmony of nature was disturbed."

I have produced these, merely as specimens of the traditions which are held by all tribes and nations of people, to be found on the face of the earth. If any would like to know more about them, they will find them collected in Hugh Miller's work, "Testimony of the Rocks," and also in Humboldt's "Cosmos." From these traditions, these four logical conclusions are derived, viz.:

1. That this whole earth, at some period in the past, has been overflowed with water. In this respect, the evidence from tradition agrees with the testimony of the Scriptures, and that of geology. The three witnesses agree.

2. That this universal overflow occurred at a period, however remote it may be in the past, since the history of man began. It is here that the testimony of tradition comes in direct conflict with geology. They tell us of vast geological periods, when there was no land—nothing but a watery world, with such animals and plants as could exist only in water—and that during those long ages, there was no man, and no land animals on this earth. Yet the evidence of tradition shows that there was certainly one family which survived that universal deluge, having been preserved in a vessel, thus proving that the human race had existed on the earth, before the prevalence of that flood.

3. A third conclusion is, that the present races of mankind must have descended from one pair, or from a single family as Humboldt argued.

4. The fourth and last conclusion is, that the truth of the Mosaic Record is established. These traditionary accounts exist independently of one another, and in distant and remote countries. Thus, Moses did not obtain his account from the Hindoos, from the Chinese, or from the Mexicans—nor could they have obtained their traditions from Moses. But every separate nation has had its own tradition of the deluge, independently of all other accounts. And yet, though these traditionary accounts differ widely in

their minute details, they agree substantially as to all the material facts of the flood, as they have been given by Moses. For example, they agree as to the main fact itself, that there was a universal deluge—that it was brought upon the earth because of the wickedness of its inhabitants—that it was caused by immense rains, and also by a convulsion of the earth—by its falling into pieces, as one expresses it—by the sea overwhelming its shores, and deluging the earth as another has it. They agree that there was one family saved in the ark—of course, they differ as to the dimensions of the ark, and other minute details—but whenever they mention the number of persons saved in the ark, as several of them do, they agree with Moses as to the number eight. One of these traditions even mentions the crime of Ham against his father, after the flood, which brought on him the curse, almost exactly as Moses has related it. Most of these traditions agree as to the incident of the bird being sent forth from the ark three times, to ascertain when the waters had abated. Several of them mention the fact that the ark finally rested on a mountain in Armenia—Moses says, on Mount Ararat, which we know to be a mountain in Armenia.

Now there is not the slightest probability in the world that any individual living in any of these ancient nations, had ever seen the Mosaic Record of the flood, or even had any knowledge of the existence of such a man as Moses. These nations existed in the four quarters of the earth; and not only did they not know any thing of the Mosaic Record, but they scarcely could have known of the existence of one another.

And yet, all these nations and tribes, independent and separated from one another by time, space and language, have preserved one common tradition—but only one, as we know of no other that has come down to all nations from the beginning—one common tradition concerning a universal deluge—agreeing exactly as to every material fact, with the account that Moses wrote in his Genesis. Now, here is a concurrence of testimony—the consent of universal mankind, that could not have happened on any other supposition except that Moses was right, and that the flood occurred, substantially, as he has described it. If belief comes necessarily from a sufficiency of proof, then, I say, here is a case where disbelief is impossible. If there is a historical fact in the history of the world that is susceptible of demonstration, it is this.

III. I come now to the third branch of the argument—the evidence furnished by the facts of geology. This is the most interesting branch, not because the evidence is intrinsically, or in its nature, the most interesting and convincing, but it gives the opportunity to meet the opponents of the Bible, and to overcome and silence them with the weapons of their own choice. We shall see that the facts of geology are in exact accord with the Mosaic Record, and the traditions of all nations.

Sceptical philosophers have always been in the habit of denying, on philosophical grounds, the Scriptural account of a universal deluge. And I may add that not a few divines, of the easy faith which makes the Bible always teach what they want it to teach, have been

led away by the same philosophy, which teaches that there is not water enough on the globe, to produce a universal deluge. The argument formulated by Mr. Jefferson, was logically and correctly stated thus: if all the water or moisture in the atmosphere that surrounds the entire globe, were to descend, at one time in the form of rain, the effect would be to raise the ocean only fifty-two feet above the present level. And of course that elevation of the waters would not make a universal deluge, nor cover "all the high hills under heaven" as Moses says. And this sceptical argument was supposed to be a complete refutation of Moses.

But now, when geology comes in to sustain the biblical theory that not the rain, but the ocean mainly furnished the water for the universal overflow, that objection of the philosophers is annihilated.

We are forced to the conclusion by the admissions of geologists, and by the indications found everywhere in the earth's crust, that the lands on which we dwell, were once ocean-beds, and that at some prehistoric date, not farther back than five or six thousand years ago, they were simultaneously upheaved from the ocean depths, and never again submerged. If this great fact is susceptible of absolute demonstration, it will follow that when the upheaval took place, the waters thus suddenly elevated, flowed over the former lands which were not thus elevated, covering the whole earth, till new beds were sunk to receive the retiring waters. Water will find its level. The law of gravitation compels it. And as the waters did not flow back on their former beds, the old continents must have been permanently submerged to form new ocean

beds, as there is undoubtedly the same quantity of water in existence now as in the beginning.

But it is not pretended that there are any natural causes in existence that could produce that revolution, changing the entire aspect of the globe, suddenly causing the sea and land to change places. How often, and in what varied phraseology have our best scientists admitted their inability to explain the mystery, and affirmed that no natural causes now in operation, are adequate to effect or to bring about the changes that have taken place on the earth's surface. Cuvier says:

"It is vain to look for forces now acting on the surface of the globe, powerful enough to produce the revolutions and catastrophes of which it bears the traces."

Agassiz, if possible, makes use of still more emphatic language, saying:

"Causes now operating are not sufficient to produce all the geological phenomena of past ages. These will explain a variety of phenomena, but are not sufficient and adequate to account for the present aspect of the globe."

Can we believe these scientists? If we cannot credit Cuvier and Agassiz, there are no scientists, living or dead, whom we can trust. And they affirm, in unqualified terms, that the laws of nature do not account for the present aspect of our globe. And if not, then the only alternative is to suppose a supernatural cause; that is, a miracle. I know of no intermediate position between natural causes, and super-

natural. Principal Dawson, of Montreal College, speaking of this mystery said:

"So great changes of the level of sea and land on the northern hemisphere occurred, that our continents were at one time submerged several thousand feet, and at another time, were higher and broader than they are at present. Yet geology and astronomy concur in assuring us, that the poles of the earth have remained unchanged, and neither has yet given us satisfactory causes for all the changes and phenomena observed."

Prof. Marsh, of Yale College, a distinguished scientist, says: "A brief glance at the Rocky mountain region, shows that it was once covered by the sea." And again, he says: "During the cretaceous period, or the period of the chalk mixture the Rocky mountains, as we know them, did not exist, and the sea swept from the Gulf of Mexico to the Arctic regions, save some islands which possibly indicated the line of the future mountains." And he adds: "In this warm and tropical sea, reptiles and fishes abounded, all widely different from those now living."

Here, we are told that this vast continent of America, was a sea from the Gulf of Mexico to the Arctic. All the facts of geology establish this conclusion. No intelligent person would deny this. The same is true in regard to all the continents which are now inhabited. They were formerly seas. Respecting the Asiatic continent, Prof. Owen, of London, says:

"The fossils of giraffes and hippopotamuses, in newer tertiary deposits high up the Himalayas, signifi-

cantly point to the geologically recent elevation of that grand mountain chain, and therewith probably to the movement resulting in the present configuration of the Southern Asiatic land."

Now if this elevation of the Asiatic continent from the ocean depths, took place at the same time with the elevation of the American continent, and according to the statements of the authors just quoted, the elevations must have occurred at the same time, then there is no avoiding the conclusion that the waters must now occupy the Atlantic and Pacific regions, that formerly covered these continents. It is certain that as the waters did not flow back on these continents, new ocean beds must have been formed to receive them.

Moreover, if these upheavals on opposite sides of the globe were simultaneous, it is easy to understand that the overflow must have been universal.

Again, science shows that the period when these upheavals took place, synchronizes with the Mosaic period. Cuvier says that it was not over five or six thousand years ago. Prof. Richard Owen says that it was a recent geological date. But a scientific and thorough investigation to ascertain the age of our great rivers, shows that the date when the ocean waves retired from these present continents, and subsided into the present great basins of the Atlantic, the Pacific and the Indian Oceans, must have been just about the date of the Noachic deluge. I give here the results of one of these explorations in respect to our great river—the Mississippi—"the father of waters." The river must certainly be as old as the continent of America. The Mississippi has been in existence as

long, certainly, as the grand continent on which we dwell. And if we can ascertain by a scientific method, how long the Mississippi has been pouring into the Gulf, we shall have ascertained the age of the continent.

From the quantity of deposits at the mouth of the river, certain scientists had given out that the Mississippi must have been rolling its mighty flood into the sea for more than a hundred thousand years, and that, therefore, the Bible chronology was proved to be false. But these scientists had no correct data, from which to draw their conclusion.

A few years ago, the U. S. Government caused an accurate survey to be made at the mouth of the Mississippi, with a view to ascertain the amount of alluvial deposits, and thus to determine, approximately, the age of the river. This was done at the expense of the Government, by a competent corps of engineers, who spent many months in the work. Their report makes quite a large volume, which is now in the archives of Congress. They conclude their report in these pregnant words, which I have exactly copied, as follows:

"The present rate of the progress of the mouth, may be obtained by a comparison of the progress of all the mouths of the river, as shown by the maps of Capt. Talcott, U. S. Engineers, 1838, and of the Coast Survey in 1851, the only maps that admit of such a comparison. They give two hundred and sixty-two (262) feet for the yearly mean advance of all the passes. The mean advance of all the passes represents correctly the advance of the river, because in the changes that take place, each pass in succession, may become the main or chief pass. Adopting this

rate of progress per annum, 4,400 years have elapsed since the river began to advance into the Gulf."

That is within one hundred years and a fraction, of the period that has elapsed since the Noachic deluge. In this complete harmony between science and the Bible, I feel that, as Christians, we ought to give praise. The literal truth of Genesis is vindicated in spite of all their philosophical objections.

If the Mississippi is not more than 4,400 years old, it must have begun the work of excavating its mighty channel, just after the epoch, when the geologists tell us that America was a vast tropical sea, and was suddenly upheaved from the ocean—an event that occurred, as science shows, just about the time when Moses says that the fountains of the great deep were broken up, and the whole earth was covered with water.

I could give any amount of evidence of a similar nature, to prove that the continents now inhabited were all formerly ocean beds, that were upheaved about the date of the universal flood. The scientists who accompanied Buonaparte in his expedition to Egypt in 1800, by careful experiments to ascertain the thickness of the Nile deposits, found the age of that river to be a little over 5,000 years, a result, differing not very materially from that of the scientists who measured the deposits of our Mississippi. The most accurate estimate makes the age of the Niagara about 4,500 years. These estimates bring us near the epoch, or the date when the great continental upheavals took place.

There is one universal fact, known to every one, to which I must just allude, and that is, that wherever we dig into, or go down below the surface of the earth, we find only the remains or productions of the sea, as gravel, sea shells, fossils of fish, marine rock formations, etc., furnishing undoubted proof, that they were formed, or that they existed in the sea in a former age. And we are just as sure that these continents were once oceans, as that they are now dry land. I say that we absolutely know this, and it is not merely a theory or a speculation. It is admitted and asserted by scientists, and even by sceptics, whose aim is to overthrow the Mosaic account. It is thus that God maketh the wrath of man to praise Him.

I will here just advert to another curious fact. Of course, the beds of our present oceans—the Atlantic, the Pacific and the Indian Oceans—cannot be explored to any great extent to discover antediluvian relics. They are too deeply buried under water. But I will mention a circumstance or two, that may throw a little light on this question. Hugh Miller, in his "Testimony of the Rocks," says:

"From one limited tract of sea-bottom, on the Norfolk coast, the fishermen engaged in dredging oysters, brought ashore, in the course of thirteen years, 2,000 elephants' grinders, besides great tusks, and portions of skeletons."

Just think of 2,000 elephants' grinders, besides great tusks and other portions of skeletons, being found in one limited tract of sea-bottom in so short a time, where they were fishing for oysters! How did they

get down there on that sea-bottom, and when? Will the scientist explain this enigma? Elephants are not marine animals. And we know that they have not been natives of that region or latitude, since the historic times began. The only solution that has even the appearance of plausibility is, that they lived and flourished there, when the Atlantic was a beautiful tropical land instead of an ocean. And when the submergence took place at the epoch of the deluge, they were overwhelmed at the same time, when, as Moses says, "every living substance was destroyed, which was upon the face of the ground, both man and cattle, and the creeping things, and the fowl of the heaven; and they were destroyed from the earth; and Noah only remained alive, and they that were with him in the ark." If it were possible to explore the beds of the ocean, doubtless many similar remains might be found.

Confirmatory evidence of the same nature is furnished by Humboldt. But I will just state a circumstance, mentioned by Charles Darwin, a leading Darwinite of our day. He says, that the remains of immense walls, with stones in them—some of them twenty feet in length, have been discovered in the remote Pacific Ocean. But he accounts for their submergence by igneous or volcanic excavation. But I think it far more probable that they were portions of the walls of antediluvian cities, that were submerged about 4,400 years ago, when the earth itself was sunk—when as Cuvier says, "the sea changed its place."

I attach no great significance to this incident mentioned by Mr. Darwin, but I would say, that, as to

the great fact itself, that the antediluvian earth was permanently submerged, I see not how it is possible to doubt it. Even if the Bible were altogether silent, geology has demonstrated it. Yea, God maketh the wrath of man to praise Him. They have endeavored to array science against the Bible. But at last, as the handmaid of religion, science has turned against them. Whenever it shall be found, that either science or the Bible is mistaken, we may rest assured that the mistake will be found on the part of science. But I do not think that this contingency can ever happen, as there can be no real conflict between them.

Before concluding this chapter, I must occupy a brief space in noticing two of the objections most commonly urged against the Bible doctrine of a universal deluge. The doctrine is received by none except those who are willing to take their creed or their faith exclusively and implicitly from God's word. But the doctrine is rejected, invariably by those who prefer to follow their own reason, or the dictates of a false philosophy. And as they cannot accept the theory, that there ever was a universal flood, they have to frame some plausible reason or reasons for rejecting this universal tradition, handed down to us by all nations, Jews, Christians and Pagans.

The two most common, and, indeed, the only plausible objections are, first, that the ark must have been too contracted to contain all the animals that were saved in it, and the food necessary to keep them for more than a year; and secondly, that there was no necessity for a universal flood, seeing that only a small portion of the earth's surface could have been

inhabited at so early a period in the earth's history. I will pay attention to each of these objections, in the order I have stated them.

1. As to the size of the ark, I would premise that, of course, we can never be certain of its exact dimensions. The smallest cubit measure given by Moses, would make the ark to have contained 16,000 tons. A larger measure which we might take as the basis of our calculations, would give a capacity of 24,000 tons. But if we take the smaller measure, and say, that the ark had a capacity of 16,000 tons, then we shall see, that it could have contained all that were in it, with thousands of tonnage to spare.

One scientist who makes a large and liberal estimate —and I think it is too large by one-half—says, that there must have been 8,566 species of animals—birds and land animals in the ark; to which, he says, we must add 550,000 species of insects; and then, he asks, is it credible that the ark could have accommodated this number of animals and insects, and the food necessary to keep them for more than a year?

He is answered by another, who had made the estimate, saying, that the weight of all the animals, even if these were as many as the first writer contends for, would not have been over 500 tons. And allowing twenty times their weight for food, which would be a very liberal allowance, that would be 10,000 tons more, so that there still would have been room for near 5,000 tons more than would have been in the ark.

But I remarked that I did not suppose there could have been over half that number of animals in the ark. Some scientists, it is well known, are in the

habit of mistaking *varieties* of animals and plants for species. A few years ago, there were some who said, that, there are as many as seven, eight, and some even said twenty, and others, as many as sixty different races of human beings on the earth; while Humboldt, Cuvier, and others, including even Huxley and Darwin, now make them a single species. They have made the same mistake with reference to every other animal and plant, that lives or grows.

There are no less than 300 varieties of the humming-bird, which all came from one single species. It is ascertained that there are twenty to sixty varieties of the common Irish potato, which was only discovered two or three hundred years ago as a wild root in South America. All the varieties of our rich and juicy apple, may be grown from the worthless sour apple, that is often found growing wild in the woods. All the varieties of the delicious strawberry, are cultivated from the common strawberry that grows wild in the cold regions of Canada, in the prairies of Texas, and in the broad and distant prairies of the far West—and grows without any culture, except what is given by the hand which originally made and planted it for ungrateful man.

There is such a thing as differentiation. We must admit that. And under the operation of this principle of differentiation, there is no animal, plant, or insect, that may not be varied, or produced in varieties, according to differences in the soil, the air, the water, the food, the culture, the habits of living, and other conditions or circumstances under which they are produced. On this point, Humboldt says:

"Families of animals and plants, writes one of the greatest anatomists of the day, Johannes Muller, in his noble and comprehensive work, undergo within certain limitations, peculiar to the different races and species, various modifications, in their distribution over the surface of the earth, propagating these varieties as organic types of species. The present races of animals and plants have been produced, by the combined action of many internal as well as external conditions, the nature of which cannot be, in all cases defined, the most striking varieties being found in those families which are capable of the greatest distribution over the surface of the earth."

This seems to be the law of differentiation, which produces varieties from one species. But let the causes or the conditions on which differentiation depends, be removed, and gradually the varieties will always go back to the one type, or the one species.

I think now, it would be perfectly safe to say, from these known conditions in the propagation of variety, without the multiplication of species, that the number of animals in the ark might be put down, certainly, at one-half the number usually estimated.

And as for the 550,000 insects, even if there were so many, nine-tenths of them, or even ninety-nine-hundredths, might have been kept in a state of somnolency, in the hollows and bark of trees floated on the waters, and landed safely on some shore, after the waters abated. There is nothing impossible with God. We know that thousands of species of insects, are kept in a dormant state, six months every year, by Him who watches the falling of a sparrow to the ground.

2. The other objection to the idea of a universal flood, viz.: that it was not necessary, as but a small portion of the earth could have been peopled in that early age, implies, I must say, a great degree of ignorance of the law that governs the increase of population, and, therefore, rests on no better foundation than that "the wish is father of the thought." Hugh Miller and others have appeared to attach considerable importance to this argument, if it may be called such. He supposed that the world's population, at the epoch of the flood, could have covered only a small part of Asia, viz., that part around or adjacent to the Caspian Sea, which he had ascertained to be lower than the general level of the land, and even lower than the level of the sea, which might, therefore, have been inundated at an early date by natural causes, and without supposing a miracle. This region, he supposes to have been the habitable portion of the globe in that age, and to have been peopled by a few hundred thousand, or, at the most, several million inhabitants. And from his own beautiful fancy sketch, he drew the conclusion, doubtless, very satisfactory to his own mind, that there was no necessity for a universal flood, and that it would argue folly in the Almighty to drown the continents of Europe, Africa and America, for the wickedness of the inhabitants, at a time when they were without inhabitants. That seems plausible enough. But let us look at it.

There is an old man now living in South Carolina, at the age of 91, who counts his own descendants now living, to the number of 536. It is known that Pitcairn's island was peopled by a remnant of mutineers

from the English ship Bounty, in 1790—only 28 souls in all. And yet, though eleven of that number perished the first year by mutual violence, in 1862, only 72 years after, the population had increased to the number of 296 souls, showing that they had doubled every 25 years.

The celebrated Euler, known to have been one of the greatest mathematicians of Germany, calculated that a single human pair would, under favorable circumstances, increase to the number of 3,000,000 in 300 years. The Jews, in Egypt, doubled in number every thirty years. The Africans, in this country, since the abolition of the slave trade in 1810, have doubled every thirty years. Yet, Mr. Miller, to make out his plausible fancy sketch, supposes that a human pair, under the most favorable circumstances, could only have increased in 1656 years, to the number of a few hundred thousand. If they had doubled every fifty years, the earth would have contained four thousand million inhabitants, or more than three times its present population. If they had multiplied as rapidly as the Jews in Egypt, or the Africans in America, there would have been no room for the population the earth would have contained at the era of the deluge.

That the primitive population of the earth were in the most favorable circumstances for increasing in numbers, is evident from these several considerations, viz.: 1. The bodies of Adam and Eve and their immediate posterity had not yet become degenerate, in consequence of which half the children died in infancy from hereditary diseases, as is now the case. 2. In the infancy of the earth, as it had come fresh from the

hand of the Creator, it was free from malarial and other causes of epidemic diseases. 3. They were nourished exclusively by the fruits of the earth, and vegetable food, as animal food was not allowed till after the flood. And those fruits and vegetables grew and ripened, almost without labor, in the purest atmosphere, and in soils then perfect. Consequently, there were no natural causes of disease and death, except excess, intemperance and mutual violence. And this explains why the inhabitants lived to an age that now seems almost incredible. Consequently, they were in a condition for multiplying very rapidly.

The objections which I have now considered, and all similar objections to the Bible, have their secret origin in a sceptical frame of mind. I would not expect any man to believe that Jesus arose from the dead—or to believe that the children of Israel passed through the sea dryshod, or to believe any other miracle recorded in the Bible, who would deny the universality of the deluge, on the ground that it implies a miracle. But miracle or no miracle, I believe it—first, because it is taught in the Bible; secondly, because it is confirmed by tradition; and thirdly, because the facts of geology demonstrate it. We cannot believe without evidence, and we cannot disbelieve against evidence; and if there is any fact in science or Revelation, that we are bound to receive on evidence, it is the great and universal fact, that, at a recent date, the ocean waves covered all these continents on which we now dwell.

CHAPTER V.

The Days of Creation; or Hugh Miller's Theory of Vast Periods Shown to be in Conflict With Revelation, and the Laws of Nature.

How scientists have been led into grave errors—Grandiloquent extract from Tyndall—Bishop Butler—The change in Hugh Miller's views—A damaging book—Pride of intellect—Miller's new names—The carboniferous age—Vegetation during vast ages before the existence of the sun—Animals and plants cotemporary—A geological fact, Dr. Buckland—The Sabbath not a natural day—Extract from Miller—From Dr. Dawson, a follower of Miller—The law of Moses—Visible signs of the change in Scotland and America—Gravitation a law of matter—Utterly subverted by the theory of vast periods—Formation of the earth's surface—Self-contradictory arguments—Miller's "placoids and ganoids"—What a shrewd writer says—Rapidity with which herrings multiply—The Niagara Falls—A "probable conjecture"—Prof. Huxley's qualms—Extract from Prof. Christlieb—The fauna and flora all of a marine nature—Logic of modern scientists—All modern science speculative—Extract from the "Anthropological Review"—A closing word.

THE fossil remains that are found in the different strata of the earth's crust, have led certain professed scientists into several grave and fundamental errors, as:

1. That the age of this world must be immensely greater than that which has been assigned to it in the Mosaic cosmogony;

2. That all life began in the sea, taking, first, the lowest vegetable form, from which the higher forms both of vegetable and animal life were successively evolved in the course of unknown ages;

3. That the earth itself has passed through great

and successive changes and epochs, as the carboniferous age, the glacial period, etc.

Now I shall have no difficulty in showing from scientific facts, that these speculations about vast geological ages, nebulous matter, the fiction of evolution, a glacial theory, etc., are so utterly destitute of any foundation in science or truth, that the day is coming, and it is not very far away, when these terms will be remembered as synonymes of the word, *folly*.

We have one of these so-called scientists—Prof. Jno. Tyndall, in one of his lectures, giving utterance to his views, in the following bombastic strain:

"Bishop Butler accepted with unwavering trust the chronology of the Old Testament, describing it as confirmed by the natural history of the world, collected from common historians, from the state of the earth, and from inventions in arts and the sciences. These words mark progress; they must seem somewhat hoary to the Bishop's successors of to-day. It is hardly necessary to inform you, that since his time, the domain of the naturalist has been immensely extended, the whole science of geology, in its revelations as to the life of the ancient earth having been created. The rigidity of old conceptions has been relaxed, the public mind being rendered gradually tolerant of the idea, that not for six thousand, nor for sixty thousand, nor for six thousand thousand, but for æons embracing untold millions of years, this earth has been the theatre of life and death.

"The riddle of the rocks has been read by the geologist and by the palæontologist, from subcambrian depths to the deposits thickening over the sea-bottoms of to-day. And upon the leaves of that stone-book are, as you know, stamped the characters, plainer than those formed by the ink of history, which carry the

mind back into the abysses of past time, compared with which the periods which satisfied Bishop Butler, cease to have a visual angle."

This may be eloquence. But eloquence is not science. Bishop Butler wrote "The Analogy." And his name is embalmed in the memory of the whole church, and so it will be long after that of Prof. Jno. Tyndall shall have passed into oblivion. In the passage quoted, he really seems to put on airs at the supposed discovery that Moses is wrong, and that the Bible must be put aside as untrue.

I. I am, first, to show that the theory of vast geological ages conflicts with the Mosaic Record.

Hugh Miller rendered an important service to the cause of truth, when he wrote "Footprints of the Creator." But afterward, he changed his views, and in part, at least, went over to the side of the enemies of truth. In his last complete work, "The Testimony of the Rocks," he announced the change in his views, in these words :

"I have been compelled to hold that the days of creation are not natural but prophetic days, and stretched far back into the bygone eternity."

No book has been written in this 19th century, in my judgment, so damaging to Christianity, as that book, "The Testimony of the Rocks." Many leading men in the church, in Scotland, England, and America, have had their judgments warped, and turned aside from the simple truth of the Mosaic Record, solely by the subtlety of the reasoning and the brilliancy of the style which we find in the "Testimony of the Rocks."

By many it has been received almost as an oracle, as if a new revelation had been made from heaven. Scores, nay, I may say, hundreds of theologians and students have lost faith in Moses as a writer of the natural history of our earth.

The summer before last, when I was in Canada, a clergyman of the English Church came down from the pulpit, saying that he could not believe Genesis and geology, and, therefore, he must give up Genesis. And he resigned his position as a minister of the church. That was the mistake of his life. He was consistent certainly, but dreadfully mistaken. Alas! how many who were men of learning and genius, and considered as lights in the church, have been carried down into this maelstrom of moral and spiritual desolation! I have in my mind, now, one who was one of the greatest preachers of this or any age, and whose father before him was a great preacher, who following these meteoric lights of "science falsely so called," as Paul says, is now a complete moral wreck.

It is pride of intellect that is at the bottom of this moral ruin. If a man is determined to believe only what he can demonstrate, we must say, there is no piety—no religion in that. Religious faith or trust is a higher—nobler principle than positive knowledge. There is nothing moral or meritorious in a man's believing that the three angles of a triangle are equal to two right angles. He knows it is so, and he cannot help believing it. But a sincere, child-like faith, which takes God at His word, believing, sometimes against appearances and what seem to be the dictates of reason, just because it is God's word—that is an act of the

soul that has the essence of true piety in it—a trust in the integrity of the Divine Word, that a mere rationalist cannot possess. The rationalist does not take God's word, but he takes the dim light of his own darkened reason, as his standard and guide in all things.

If a child should treat father or mother as these scientists treat God, refusing to believe any thing they command or say, till it can first understand the reason, we should regard it as an act of disobedience and depravity deserving of censure and punishment. And why should rationalists treat the Supreme Father, with less reverence or respect than is due from a child to its natural parent? There is certainly nothing that is more irrational in the creed or the philosophy of these rationalists, than the axiom which they have adopted not to believe any thing which they cannot comprehend. But this will illustrate the truth of a Scripture saying, "professing themselves to be wise, they became fools."

The theory originated by Hugh Miller and first published only twenty-two years ago, is one that clearly contradicts the Mosaic account of creation, and subverts the institution of the holy Sabbath as a part of the moral law, and thereby undermines the decalogue itself.

Now, let us see how this theory conflicts with the first chapter of Genesis. In that chapter, the creative days, each having a "morning" and an "evening," signifying that they are of equal length, are named "the First Day"—"the Second Day"—"the Third Day," etc. Mr. Miller invented and substituted for these,

new geological names. Thus, he names the first day of creation, "the Azoic period"—the second day he names, "the Silurian period"—the third day, "the Carboniferous age," etc. And he gives us to understand that each of these periods, instead of being a natural day of twenty-four hours, "extends over, mayhap, millenniums of centuries."

On the third day, according to Moses, the organization of the vegetable kingdom took place. Mr. Miller calls this the carboniferous age, because it was the age of plants. His words are: "it was emphatically the age of plants—of herbs yielding seeds after their kinds. In no age did the world ever witness such a flora." And, of course, the carboniferous age came and passed away, extending, as he says, through millenniums of centuries—it came and passed, and the plants, the trees, the flowers had grown and flourished during all the centuries, more luxuriantly than during the ages that have succeeded—and all before the sun, moon, and stars had been ordained. For, Moses informs us, unfortunately for the theory of vast periods, that the ordinance of God in respect to these celestial bodies, took place on the fourth day. Now the question is, how the trees, flowers and plants flourished so luxuriantly for millions of years, before the ordination of the celestial orbs. All the vegetation on this globe would die, if the sun were blotted out, or should cease to shine even for one year.

If this is not a contradiction between Genesis and geology, as geology is now taught, then I do not know what might be called a contradiction. But I proceed to point out a second contradiction, just as obvious and glaring as the one now noticed.

Mr. Miller tells us, in his "Testimony of the Rocks," and other geologists agree with him in the statement, that there were various animals in existence on the third day, contemporary with the plants, as mollusks, fishes and coral insects. Yet Moses informs us, that not till the fifth day were any living creatures formed —chiliads of centuries after the plants had been created. How then is it possible to believe that the plants and animals were contemporary on the third day? Or how could the fossils of these animals have existed for thousands of ages before Moses says they were created?

There would be no contradiction here, on the supposition that the days of creation were natural days of twenty-four hours. But when they make the days each to represent millions of years, then it is a contradiction to say that the animals created on the fifth day, millions of years after, were contemporary with the plants, which were created only on the third day.

The geological fact is, that the fossils of plants and animals are found in the same strata, showing that they existed in the same period, or on the same day. Mr. Miller is certainly very candid in making the admission, as it so pointedly contradicts his theory. As to the fact that animals and plants did exist, cotemporaneously, or in the same age, I will quote a few words from Dr. Buckland, who wrote one of the Bridgewater treatises. He says:

"It appears that the most ancient marine animals occur in the same divisions of the lowest transition strata, with the earliest remains of vegetables; so that the evidence of organic remains, so far as it goes,

shows the origin of these extinct species of plants and animals to have been contemporaneous."

I could give the greatest amount of testimony, similar to the above. I could quote a passage from Hugh Miller himself, quite as explicit as that just quoted from Buckland. But there is certainly no necessity for this. If they were contemporary—if their remains are found in the same strata—and if they existed in the same period, how is it possible to believe that the creation of the plants preceded that of the animals by thousands of millions of years? I say this is a contradiction, and every one must see that this is a contradiction.

I come now, to the most serious objection of all, to this theory of the vast geological ages. It requires us to believe that the seventh day, or the Sabbath, must be, likewise, a vast period, not a natural day of twenty-four hours, as Moses taught us to believe. If that theory can be established, our weekly Sabbath is blotted out. I say, that is the most serious objection.

Mr. Miller did not, himself, fail to see the inference that would be drawn from his theory. But instead of protesting against it as an unfair and illogical inference, he accepts and defends it as the true interpretation of Moses. He says:

"God, the Creator, wrought during six periods, and, as we have no evidence that He recommenced His work of creation—as on the contrary, man seems to be the last formed of His creatures, God may be resting still. The presumption is strong that His Sabbath is an extended period—not a natural day—and

that the work of redemption is His Sabbath day's work."

Here is the theory carried out in its bearing on the fourth commandment in the Decalogue. And here we are told that the Sabbath is *not a natural day* of twenty-four hours, but an *extended period*. And we are further informed that God did not rest—or that He is not rested, as Moses puts it in the past tense—but that He is now resting—"*resting still*." And yet not resting—as he further says, that the work of redemption is His Sabbath day's work. *Resting still*, and yet working! and doing a greater work on His Sabbath than He did during the six creative days, since the work of redemption transcends the work of creation by almost infinite degrees!

This specimen of Mr. Miller's mode of reasoning shows in a striking light, how far even a good man can go when he has a favorite theory to maintain. In this, Mr. Miller has found some followers. For example, we have Principal Dawson, of Canada, who has certainly adopted many of Miller's views, saying to the young men of Union Theological Seminary, in his series of lectures on science:

"The seventh day is not said to have a morning and evening; nor is God said to have resumed His work on the eighth day. Hence the seventh day is the period of man in which we live. Our Saviour sustains this view of God's Sabbath in His remarkable expression, "My Father worketh hitherto, and I work."

Here, we see that Dr. Dawson, following the example of Miller, makes God's Sabbath a working day

instead of a day of rest. And God's Sabbath, he says, is "the period of man"—the period in which we now live—an extended period, not yet ended, but only begun, though nearly six thousand years of this period have already passed away! This is their view of the Sabbath! And this is the kind of theology taught the young men who are in a course of training for the holy ministry, destined to become teachers and expounders of God's Word!

But let us see what Moses understood by the Sabbath, whether a natural day or a vast period—and what he taught the children of Israel, from the fiery Mount Sinai, in his lifetime.

"Six days shalt thou labor, and do all thy work." This is what God said to Moses; and this is what Moses said to the people. These six working days are natural days of twenty-four hours—there can be no question about that. "But the seventh day is the Sabbath of the Lord thy God; in it thou shalt not do any work." Now this seventh day follows, in succession, the six working days, which, it is admitted, are natural days—this seventh day is called "the Sabbath of the Lord thy God"—is this Sabbath a natural day, as the other six, or is it a long day—a vast period? By what rule of grammar, or by what rule of Biblical interpretation, can we make the six periods set apart for work, natural days, and the period set apart for rest, that follows the working days, a vast period? How can this be done? To attempt to do this, would be a clear violation of every rule of logic, and grammar, and of Biblical interpretation.

The Sabbath which God, by his own finger, wrote

upon the two tables of the law, is clearly a natural day of twenty-four hours. It can be made nothing else, without changing the law—the decalogue itself. With this fiery law flashing in his face, that was issued from Sinai while in a flame of fire, Mr. Miller issues his edict to the Christian world, saying, "the presumption is strong, that His Sabbath is an extended period —not a natural day." He gives it out as the verdict of science. Is it true? If it is true, the Christian world should adopt this view. And if they adopt it, what would become of our weekly Sabbath? Is it possible that they could believe that God's Sabbath is an extended period, and also that God's Sabbath is a natural day of twenty-four hours? They cannot believe both parts of this proposition, unless it can be shown that God has two Sabbaths, a long and a short one. But this, it is not presumed, any one would undertake to prove from the Scriptures. Man's day of rest, that follows the six working days—all natural days—is called "the Sabbath of the Lord thy God." This is God's Sabbath. It is a natural day of twenty-four hours. And there is no word in the Bible, from Genesis to Revelation, to show that God has two Sabbaths—or that God's Sabbath is "an extended period."

But if the world could be made to believe this mere dictum of Mr. Miller, they would be only too glad, and the consequence would be, that our weekly Sabbath would gradually, it may be, but surely go into disuse. The decalogue would begin to lose in the popular conscience, its binding authority as the Divine code of morals, and who could estimate the disastrous

results to the cause of religion and morals, throughout the world?

Scarcely more than twenty years have elapsed, since Mr. Miller announced the change in his views, and who has not marked the increased and increasing desecration of God's day, in our country especially, and in Scotland? The land of John Knox, and of orthodoxy itself, which for three centuries, has produced so many philosophers, and theologians, and able defenders of the faith—that land—that home of the orthodox faith is beginning already to show signs of an abundant crop from the seeds planted by Miller. They have professors in their universities quoted with approbation by such sceptical writers as John Tyndall. Movements have been made to have the convenience of street cars in operation in their cities on the Sabbath.

This attempt to tamper with the decalogue, was a hazardous undertaking. Dr. Thomas Chalmers had, before Miller's time, made an attempt to bring about a reconciliation between Genesis and geology, but he had failed. Dr. Pye Smith had made a similar attempt, but with no better success. Neither of them, however, had ventured to suggest a radical change or amendment in the decalogue. It seemed that there was no one great enough, or bold enough, to undertake what the great giant of Scotland, as Dr. Chalmers was then regarded, had failed to accomplish. At last, Hugh Miller offers himself, and undertakes to reconcile Genesis and geology. He reconciled them in his way, by laying unholy hands on the ark of the covenant.

The mistake of Mr. Miller consisted in his believing a state of antagonism to exist between science and religion; and his sole aim, in itself very right and proper, was to remove that apparent conflict. But in supposing that his science was all right, he erred in attempting to force the Bible into conformity with his notions of science, instead of bringing his views of science into harmony with the Bible. He did not seem to think that he was just as likely to misinterpret "the Testimony of the Rocks," as Moses was to misinterpret the words written on the two tables of stone.

The truth is, there is not, and there never can be any real conflict between science and religion, since He who is the author of Revelation, is also the author of nature, and God cannot contradict Himself.

II. I am now, in the second place, to show you, that the theory of vast geological ages, is in conflict with the laws of nature, as well as the written law of Revelation, and is, therefore, absurd and unscientific, and to be rejected by all who lay any claim to science.

If there is any one principle in physical science, on which we find a general agreement among all classes, it is that gravitation is a law of matter, that pervades alike every atom of matter in existence. But the theory of vast ages, as it can be demonstrated, sets at defiance the law of gravity. That theory requires us to believe that our earth, and the sun, and Jupiter, and Saturn have been revolving on their axes, not for 6,000 years only, but for periods that can be measured only by millions or billions of years.

These globes, they assure us, are all composed of the same material, whether suns, moons, or planets—

they are all formed of the same original matter—the nebulous matter. And they were all revolving on their axes—and there was a date, whether far back or more recent, when they began to revolve on their axes. Now if the globes revolved ages on ages ago, when they were in a nebulous state, and when they were in an incandescent, red-hot, melted state, then, I lay down this proposition as one that every scientist would endorse, that the particles of matter, when they were in a fluid state, and floating about freely, would arrange themselves, according to their specific gravity. This is the way that the law of gravitation acts. We know that the lighter particles of atmosphere, go up till they come to a region where all the particles have the same lightness; and that the heavier air settles down nearer the surface, where all the particles of air are of the same density, or the same specific gravity. Every atom of matter in the universe of God, is equally bound by the same law. It is in this way that the drops of water in the ocean, always take the places that belong to them, either near the surface, or farther down towards the bottom, according to their weight or gravity.

Now this earth revolved on its axis for countless ages, when it was in a liquid or fluid state, and when all the atoms could arrange themselves nearer to or farther from the centre, according to their weight. Now, as the globe cooled and contracted, solidification would begin to take place; as they tell us, at the surface, where all the lightest matter would be arranged. Then, according to this law, we should have a series of concentric rings, like the concentric

rings of a tree, all the particles of matter, having the least specific gravity being in the outer ring, with inner rings formed of matter, increasing in density in the direction of the earth's centre. But we find that the earth's solid crust is not made up of a series of concentric rings—not even a single ring.

On the contrary, there is a total departure from this great law of gravitation. There is no concentric ring formed as the matter became solid, and the atoms are not arranged at equal distances from the centre, according to their specific gravity—a condition absolutely required by the nebular theory.

We are in possession of another great cosmical fact, found in the present structure of this globe, which shows the contrariety that exists between the theory of vast ages, and the law of gravity. If the earth revolved on its axis, for so many ages, when in a fluid state, the law of gravity would have compelled it to assume the form of a perfect sphere, with the exception of a slight flattening at the poles in consequence of the centrifugal force at the equator, as we know, is the case. But is the earth a perfect sphere, with the exception named?

It was ascertained by Humboldt, that Europe lies 671 feet above the ocean; that Asia is 1,132 feet above that level; North America 748 feet, and South America 1,151 feet above that level. According to this estimate the earth is not a sphere. The atoms of matter have not been arranged all equally distant from the centre according to their specific gravity. North America and Asia, lying on opposite sides of the globe, show a variation of nearly 400 feet in their

respective distances from the centre of gravity. Of course, they would say, this is a slight variation, when we consider that the distance to that centre is 4,000 miles. Nevertheless, it is a variation, and the law of gravitation, working without any disturbing cause, admits of no variation.

The liquid or watery surface of the globe at the equator, is not 400 feet farther from the centre in the Eastern hemisphere, than it is in the Western. Why then should the solid land be more elevated in one hemisphere than in the opposite one? We assume that the watery particles of matter on the Asiatic side of the globe, are just as far from the centre of gravity as they are on the North American side. Then why are not the solid particles of matter, composing the earth's surface on the Asiatic side of the globe, just as far distant from the centre of gravity, as they are on the North American side? It is true that the solid state of the matter would prevent the particles from now adjusting themselves in their right positions at equal distances from the centre, according to their weight. But this adjustment was made when the matter was in a state of fusion, as they say the whole earth was for indefinite ages, and the solidification took place after the particles had all been arranged by gravity in their proper places, while in a fluid state. And, certainly, the surface could not have been changed, after the matter became solid, without some counteracting or disturbing cause.

These objections to the theory of vast ages, founded on the action of gravity, are scientific objections. They are not hypotheses nor speculations of my own,

but they are scientific facts which can never be met, till the law of gravitation itself shall be overthrown.

I want to remark, now, that nearly every fact, and every argument which they bring forward in support of the theory of vast geological ages, is of such a nature as to refute or answer itself. I will give a specimen or two of these facts or arguments.

Thus, in regard to the antiquity of certain kinds of fishes in the seas, Hugh Miller has these words:

"The earliest fishes seem to have been placoids. The Silurian system has not yet afforded a trace of any other vertebral animal. With the old red sandstone the ganoids were ushered upon the scene in amazing abundance, and, for untold ages, comprising, mayhap, millions of years, the entire ichthyic class consisted, so far as is yet known, of but these two classes."

A shrewd writer criticises this paragraph in Miller's work, by saying, "it shows a singular misapplication of terms; a total ignoring of the ways and habits of the finny tribes; a repudiation of the laws of nature; and an unwarrantable conclusion from the ascertained facts." Now that is a very sharp criticism of Mr. Miller, yet I must say, it is just and true to the letter. I don't know where we could find another passage of equal length, containing a greater amount of inconsistent and contradictory statements.

In the first place, I will point out wherein he contradicts Moses as well as contradicts himself, in the paragraph quoted. We perceive that he has placoid fishes in the Silurian age. The Silurian age, as we have seen, is the name Miller has given to the second day of creation. But, according to Moses, the finny tribes

were brought into existence on the fifth day, which is Mr. Miller's Oolitic age. There were no fishes of any kind on the second day, or in the Silurian age—not till the fifth day, according to the Mosaic account. But Mr. Miller, professing to believe Moses, has placoids on the second day.

But the object I had in view by quoting the paragraph, was merely to show that the statement he has made is self-contradictory, and, therefore, refutes itself. Just think of the assertion that, "for untold ages," comprising, mayhap, millions of years, there were but two classes of fishes in existence—placoids and ganoids—or, the armor-covered tribes, as the shark, the sturgeon, the alligator, etc.—did he mean to affirm that, after God had created these, He permitted millions of years to elapse before He created the various other classes—as the great whale, the salmon, the bass, the perch, the cod, the turbot, etc.? It seems to me that the only comment or remark called for by the singular statement of Mr. Miller is, simply to suggest that if the placoids and ganoids had been sole occupants of the seas as long as he supposed, there would have been no room or space for the other classes afterward, even if they had been ushered upon the scene. For some of the marine tribes have the habit, as is well known, of multiplying very rapidly. A naturalist, for example, has calculated that a single pair of herrings, which belong to the ganoid class, will multiply sufficiently in 6,000 years, to form a solid bulk or mass equal to the size of the earth itself. But what is the term of 6,000 years, as compared with Miller's period of "millions of years?" Who will say that such facts and arguments do not refute themselves?

Another specimen which I give, of the facts and arguments which they adduce to overthrow the Mosaic cosmogony, and establish the theory of vast ages, but which I think refute themselves, is taken from that wonder of nature—the Niagara Falls. They admit that the cataract recedes, at least, a foot every year, and that it has taken 30,000 years to wear its channel seven miles, from Queenstown to the present site of the Falls. That is a refutation of the Mosaic record, as they suppose—and they have used it much for that purpose. But does it prove the theory of vast geological ages? What is the brief term of 30,000 years to their vast ages? to their long "æons embracing untold millions of years?" If they could establish the calculation that the cataract has been receding only for the brief period of 30,000 years, it would be a perfect refutation of the theory of vast ages, as I think I can demonstrate. Suppose, for a moment, that the Niagara had been wearing its channel from Queenstown for only one million years—and they would say that is a very short geological age—where do you suppose the site of the Falls would have been at the present time? Would it take even the tenth part of a million years, at the present rate of recession to get up to the lake and drain all its waters? Don't you see that if the theory were true, the Falls of Niagara would have ceased their roar vast ages ago?

But now, while speaking of Niagara, I want to say in regard to that calculation of 30,000 years, that they have made a great mistake. I will explain how they got the calculation, and how the mistake occurred. The geologist who made the calculation first, said:

"As this part of the country was a wilderness till near the end of the last century, we can obtain no accurate data for estimating the exact rate at which the cataract has been receding. Mr. Bakewell, son of the eminent geologist of that name, made the first attempt to calculate, from the *observations of one who had lived forty years* at the Falls, and who had been the first settler there, that, in that time, the cataract had gone back about a yard annually.

"But after the most careful inquiries which I was able to make, during my visit to the spot in 1842, I came to the conclusion that, the average of one foot a year, would be a much more probable *conjecture*."

A *conjecture*, then, is preferred as the basis of a scientific calculation, to the observations of one who had lived forty years at the Falls. There is a difference between "a yard annually," and a "foot a year." In the age of Niagara, it would be just the difference between 30,000 and 10,000 years. If the geologist had made his estimate on the observations of the old settler, who had lived forty years in the vicinity, that the Falls had receded a yard annually in that time, he would have announced 10,000 instead of 30,000 years, as the age of the cataract. But he preferred a probable conjecture, and that would give 30,000 years. And during the last thirty years, certain geologists have been repeating this unfair and unscientific calculation as an argument against the Mosaic record as to the age of the world. Prof. Huxley did not disdain to repeat it in his last lecturing tour in this country. On one occasion he asserted—I think it was in Buffalo—that the cataract had been 30,000 years wearing its channel. But when he got down as far as Nashville,

Tenn., he qualified the statement by making the period a little more than 10,000 years, showing that even he was not entirely destitute of any qualms of conscience, and that he believed 30,000 years was too strong a statement.

But I desire particularly to call attention to another obvious and important mistake in this calculation as to the age of Niagara. The calculation is a simple question in the rule of inverse proportion, which any schoolboy would be competent to work out. It is known that the water is now pouring over a precipice, in two thin sheets, divided by an island—the broader sheet being 1,760 feet, and the narrower one 600 feet in width—giving a total width of 2,360 feet; while below, the channel is only from 600 to 1,200 feet in width, the mean of which is 900 feet. By the rule of inverse proportion, if a thin sheet of water, spreading over a wide channel of 2,360 feet, wears "*one yard annually*," according to the observations of the old French settler, the same stream or current, when compressed into a narrow channel of 900 feet, would wear proportionately faster, and would give two yards and two-thirds of a yard per annum as the rate of recession. This would give us the period of 4,500 years, during which the Niagara has been thundering on its way from Queenstown up to the present site, which fixes the date of the beginning at the epoch of the deluge, and corresponds almost exactly with the estimate of the U. S. Engineers, as shown in the preceding chapter as to the age of the Mississippi.

I must say that it affords me no small degree of satisfaction to know that the God of the Bible has left

on the surface of this globe such monuments as the Niagara Falls and the Mississippi river, to attest the truth of His written Word. As long as the one shall continue to roll down its mighty flood into the Gulf, and the other to utter its voice above the clouds, God will not be without witnesses on this continent.

I think that, now, we ought to feel prepared for the admission that the Mosaic period was quite sufficient for the changes and the varied phenomena found in the geological structure of the globe. It will be apposite here, for me to quote from the lecture of Prof. Christlieb, of Bon University, before the Evangelical Alliance in New York, a few sentences, in which he declared that scientists are beginning to beat a retreat. His words are:

"Sober investigators are, on the ground of careful observation, beating a retreat, and now, instead of the favorite million of years, formerly held up to the astonished public, are computing much more moderate periods. The ages or eras of the mammoth, the cave bear, and the reindeer, which scientists, especially Frenchmen, have been trying to separate by thousands of years, are now, by thorough investigators like Fraas, placed quite close together. And now, scientists are beginning to abandon the idea of the stone, bronze and iron ages being successive periods, so that we may confidently assert that some of these remains extend back no more than a few centuries beyond Cæsar, and hence, are not even older than historical times. And so, after all, the 6,000 years of the Bible, are not so utterly insufficient to accommodate all the remains of ancient civilization. But in what haste were scientists at the time to spread these now exploded notions in all kinds of popular public journals."

I have but one remark more to make, and that has respect to the fauna and flora, or, in simpler words, the fossils of animals and plants found in the stratified rocks on all the continents. The discovery of these fossils gave rise to the new science of geology, which was not a science, and was not taught in any school or college fifty years ago, when the writer was a student. And whether he gained or lost by that, he can sincerely say, that, he congratulates himself that it was not taught then.

But what I intended to remark concerning the fauna and flora, is, that we could never have known any thing of them, but for the upheaval of these continents on which we are now living. These fossils afford undoubted proof that previous to the upheaval, the ocean waves flowed, perhaps to the depth of thousands of feet over the places, where we now dwell, and that monsters of the great deep sported and swam in the waters here, where there is now such a beautiful terra firma, inhabited only by terrestrial beings instead of sea-monsters.

Another remark I would make concerning the fauna and flora is that they are all of a marine nature—that is, all plants and animals that lived or grew only in the water. No terrestrial animals or plants are found as fossils in the rocks. It is something strange that geologists have so little to say about this very significant fact, the lesson of which seems to be utterly ignored by them. The only inference they have been able to draw from it, is, that in the very remote past, there was an age of fishes—an age when nothing but fishes and other marine animals existed, which con-

tained in themselves the germs from which we and all other things living on the land, have since come into existence by evolution. This is their logic. They find these marine fossils in the stratified rocks below us, and we are living upon the earth superposed or lying directly above those rocks, and they say that is proof that we, and all the land animals and land plants, have been developed from those animals and plants of the sea, whose fossil remains are found in the rocks. I say this is their logic. They entirely ignored the possibility, that, when these continents were seas filled with marine animals, that lived and died, and left their remains in the rocks, the present oceans—the Atlantic, and the Pacific—were the continents, and that when they were submerged, or became oceans, all the land animals and plants must have been submerged with them.

If sea and land changed places no longer than 5,000 years ago—and this must henceforth be the acknowledged and great central fact of geology, this will explain, in a satisfactory manner, the absence of terrestrial, and the presence only of marine fossils in our stratified rocks. Yet no force of logic could make this conclusion evident to their minds, and they preferred to believe that we have all been developed from the fishy tribes; and that, as one of them said, the forefins of a fish were the roots or the germs from which have been developed in the course of long ages, these hands of mine—yes, from the fins of a fish! How true is the Scripture which saith: "professing themselves to be wise, they became fools."

As it appears to us now, these scientists seem to have been living in some dream-land. Many of them, may live to see the day, when they will regret their attempts to palm off the brilliant conceits of their fancy as science. A writer in the "Anthropological Review," says:

"It may almost be asserted, that, every scientific opinion is speculative. It may be safely said, that, there is no opinion current among scientific men—not even of those opinions whose claim to the title '*principle*,' appears most unquestionable—that is not, essentially, *provisional*, liable to modification, or even to revolution, under the pressure of increased knowledge."

The "Anthropological Review" is one of the leading scientific journals of the day, and here it is said, that every scientific opinion is speculative—and that there is no opinion current among men of science, that is not liable to be modified, or revolutionized, when further light shall dawn. Then, how can we trust them? Or why should we call their speculations science?

I have not adduced, in this chapter, a tithe of the evidence which exists, to show that the theory of vast ages is contrary both to revelation and the laws of nature. But the specimens which have been presented will, perhaps, suffice to carry conviction to every candid and inquiring mind.

I close with a single word—their mistake, as to the long ages—the untold millions of years of which they speak so fluently, grew out of their ignorance of the time when—and the manner how the sea and land

changed places only about 5,000 years ago. They knew nothing about this—and therefore, they have blundered, erred, fallen!

A SUPPLEMENT.

As there are those who make the phrase, "In the beginning," which occurs in the first verse of the Bible, refer to an indefinite and vast geological age that elapsed before God entered upon the specific work of the six creative days, it may be proper to append a few remarks here, touching immediately on the meaning of that pregnant word "*the beginning*." The celebrated Dr. Thomas Chalmers had adopted the idea of a vast period of duration that intervened between "the beginning," and the definite periods of six days which he believed to be natural days of twenty-four hours each. This intervening age he believed to have been a long age of chaos, darkness and confusion. But he afterwards abandoned this belief, on account of the difficulty of reconciling the existence of animal life on the globe during that chaotic age, with the assertion of Moses, that not till the fifth day of the work of creation did God create every living creature that moveth in the waters, or that flies in the firmament above the earth. After him, Hugh Miller invented the new theory to explain the difficulty, by prolonging the natural days into vast ages, which has since been so generally adopted within less than a quarter of a century. If we analyze this theory, or look at it simply from the stand-point of philosophy, it is replete with difficulty and absurdities. What is meant by, "in the beginning?" What is time? What

is duration? If, according to Revelation, time is to have an end, does it not follow, that time must have had a beginning? And is not this what is signified by the phrase, "in the beginning"—the beginning of time?

A gentleman who is a Doctor of Divinity and a Professor in the New York university, affirmed his belief that the vegetable matter which enters into the formation of the coal beds, must have grown millions of years ago. When asked if he believed in the Mosaic Record, he replied in the affirmative. But as vegetation cannot thrive now without sunlight, and without the electricity that comes solely from the sun, he could not explain how the vegetation flourished and grew so luxuriantly for millions of years, before there was any sun in existence, since Moses puts the creation of the sun on the fourth day, but the creation of the vegetable kingdom on the third day. But this gentleman is a Doctor of Divinity, and a Professor in one of our highest institutions of learning.

It is not very many months since a bright and promising young man, who had been brought up religiously, but had imbibed the notion from one of these teachers at college, that life and death have reigned on this globe for millions of years, influenced by despair or dejection because of the undermining of his hopes—so his parents afterward testified—went into a hotel in Philadelphia, and with a pistol blowed out his own brains in the night.

Since the adoption of this theory of an infinity of ages, it has become quite the fashion, with many smatterers in the modern philosophy, to use the phrases

"æons upon æons," "chiliads of centuries," "millions of ages," etc., etc., as if they really had some definite conception of the meaning of such phraseology. One of these scientists—Prof. Proctor—even attempted to elaborate the proposition in a public lecture, that time had no beginning—that time is infinite duration—in other words, that there is no distinction between time and eternity. I quote his words:

"Let us take an infinite line in time. Let us carry back our thoughts infinitely, an infinite progress backward. Do we come to an end? Is it not a thing that can have no end? You come to the beginning of all things on that side, the beginning of all created matter. Beyond all that is the infinite void of time. Suppose you come to the end of all things; beyond all that is the infinity, the infinite void of time. We have on either side of us infinity; the idea that the whole of time has been, and is to be expended in the past and future; the idea that the whole of time has been occupied by the occurrences of events, or the idea that there has been some part of time unoccupied —both ideas are equally impossible to our conceptions. Since both are equally inconceivable, we should naturally take that which is most congruous, the idea that the whole of time has been occupied. We are led again to the utterly inconceivable idea that there can be no beginning and no end. One need not be repelled by the words of Scripture—the words of Scripture are, '*in the beginning*'—but they don't say, there was a beginning of time, but a beginning of forces, as far as we are concerned. It has been said that the very idea of the progress of time implies a beginning. It has been said that the very idea of space implies a limit. So we find ourselves, whether we consider space or time, led to inconceivables."

From the above, if any thing is clear, it is that the idea which the scientist labored to convey to the minds of his hearers, was that time is infinite at both ends, and that it is utterly inconceivable that time should have had a beginning, or that it will have an end. And he says that we are not to be repelled by the words of Scripture, which declare that there was a beginning, and also that time will have an end. He presumes to put his philosophy—his own idea above the words of Scripture. He confounds the distinction between time and eternity. But now, let us recur to the question, What is time? A proper answer to this question, will indicate a manifest difference between time and eternity.

Time is measured duration—duration by cycles of years, and centuries. The cycles of time are divided, and subdivided into periods, as years, months, days, weeks, and minutes. And we cannot conceive of time, except as thus measured into greater or less periods of duration. But we do not conceive of eternity, even if it were possible to have any conception of it at all, which it is not, as thus measured into equal divisions or periods of duration. There is nothing in the universe eternal but Jehovah, and we do not conceive of His existence, or His life-time, as consisting of so many equal cycles or centuries of duration.

The beginning of time was when the division of time into periods began, as years, seasons, months, and so on—and that division or measurement commenced only at the moment when God made the great clock, which marks the divisions and epochs of time. We may—we can—and we do conceive, that when

that event occurred, and the greater and the lesser lights were set in the firmament of heaven, "to be for signs, and for seasons, and for days and years"—that then, the course of time began. Before that eternity was—God's own eternity. But there was no time—and no measurement of duration into years and cycles of ages. I speak now of our own universe—the solar system, as we have no positive knowledge of any other, and all that we pretend to know of any other system or worlds, is based on mere conjecture.

Again, in order to have a just conception of time, it is necessary not only that there be a division into periods, as years, days, etc., but that there be a power or capacity somewhere, to mark or take notice of the lapse or the progress of those successive periods of duration. For example, our own experience shows that we are only sensible of the flight of time by being able to notice the labors we perform, the succession of incidents and events that make up the current of our lives, or the thoughts and cares that chase one another through our waking hours, thus like the pendulum of a clock, marking every second, and making time, sometimes, seem to be oppressively long. But let one fall asleep, and sleep so soundly that he never hears the clock—and has no consciousness of the thoughts passing in his own mind, and is not even disturbed by a dream during the night, has he—or can he have, when he wakes in the morning, any consciousness of the flight of time, while he was locked in the embrace of sleep?

Again, suppose that the dead sleep—that they remain in a state of unconsciousness, till the resurrection morn, as Isaiah says:

"Awake and sing, ye that dwell in dust; for thy dew is as the dew of herbs, and the earth shall cast out the dead. Come, my people, enter thou into thy chambers, and shut thy doors about thee; hide thyself, as it were, for a little moment, until the indignation be overpast. For, behold, the Lord cometh out of His place to punish the inhabitants of the earth for their iniquity; the earth also shall disclose her blood, and shall no more cover her slain."

That sleep of the grave may last a thousand or ten thousand years; but here, it is spoken of as "*a little moment.*" They are at rest—God's people—they are invited to enter into their chambers—the graves—"till the indignation is overpast." The storms of time beat over their graves; and wars rage, and the revolutions of earth succeed one another. But they hear them not—they heed them not; they have no consciousness of the indignation; they rest undisturbed till the morning breaks. Then they awake out of their sleep, they come forth refreshed, and the sleep of ages seems but the repose of a short night—"*a little moment,*" as it is represented in the beautiful words of God's inspired poet.

Having no remembrance of the bloody revolutions, and scenes of contention and strife that went on over their graves, their waking in the resurrection morn will seem like the experience of one, who, weary and tired, had gone to rest in the evening, and had slept so soundly, that he was unconscious and oblivious of everything that had occurred in the night, and could hardly realize that the morning had dawned, the interval seemed so brief.

Once more, to give an idea of time, let us suppose that He who built all things, should cause the clock of

eternity to stand still for a thousand years, as Joshua commanded the sun to stand still for a single day—and we might suppose this, for all things are possible with God—there is nothing dissolved—nothing destroyed—but life, and consciousness, and motion are suspended—as totally suspended as if annihilated in a moment of time. And every thing remains for a thousand years, in the very attitude and position which it was in at the instant when the order was given, and the wheels of the clock were suddenly stopped—and remains so for a thousand years. For example, the bird that was on wing, in the act of flying, remains in the air with outspread wings for a thousand years, not actually flying, but in the attitude of a flying bird—and the lion that was in the act of springing on his prey, continues in that attitude during all those years with eyes glaring on his prey, and his prey still before him, just as they were at the moment when the clock stood still—and the philosopher, who was engaged in writing his book, remains fixed in that attitude, with pen in hand, looking down on his paper, just as natural and life-like as when every pulse instantly stood still—and the maiden that was standing before her mirror, admiring herself, and arranging her ornaments, becomes utterly unconscious—dead—but continues in the same position before her mirror, perfectly life-like—and so, in reference to every thing having life, or breath, or motion—the clock stands still, and as the last tick is heard, there is an instantaneous stagnation of life throughout the mighty system—all motion is suspended, and every pulse is still. But every thing remains in appearance as it was when the pulse of the

universe ceased to beat. It is a dead universe, yet looking as natural and life-like as at the moment when the universal paralysis took place. And this, we suppose, continues for a thousand years. Then He who made the clock and suspended its motion, touches the pendulum—it begins to swing, and as the first ticking sound is heard, the whole machinery is in motion again, and the dead universe is all alive again, and every motion and sign of animation is resumed precisely at the point where the suspension took place. For example, the bird that was on wing, is seen to continue its flight in the air, from the point where it had been arrested, as though it had never been stopped at all—and the lion in the forest, with glaring eyes, about to spring on his prey, is now seen in the same position, and, perhaps, actually makes the leap which he had meditated a thousand years before—and the philosopher goes on writing his book, and recording the same thoughts that were in his mind at the moment when the pulse of the universe stood still—and the maiden before the glass, continues to arrange her curls and ornaments, just as she had been doing a thousand years before, utterly unconscious that any interruption had taken place in her movements.

If the Almighty should cause such a contingency as this to occur, whether for a thousand, or a million years, or for a thousand million years, for it would make no difference as to the length of the period, what we affirm is, that if the extinction of life and the reanimation were absolute and instantaneous, there would be no conscious recollection of any lapse of time, or of any thing that had occurred between the two

instants marking the beginning and the close of that long period. A thousand million years, or a brief eternity could be dropped into their short life. But it would be a cipher—a blank, just as if it had not occurred at all, since there would be no recollection of any thing, and therefore no knowledge that such an interval had occurred. We see then how an eternity might be compressed into less than a moment of time. We see the difference between eternity and time, or measured duration.

These remarks may seem superfluous—perhaps, out of place. But when we read so much about "untold millions of years"—periods of "infinite duration," etc., as applicable to the states and conditions of our earth, in nearly all the literature put forth in such prolific abundance by our modern philosophers, it may not seem altogether a work of supererogation to have written this supplement to our Vth. Chapter, on the unphilosophic character of the modern theory of *vast ages.*

CHAPTER VI.

The Glacial Theory Examined; and Shown to be the Dream only of a Dream.

"Lost rocks" or "bowlders"—Where found—The Richmond bowlders—Size of the Alpine bowlders—The phenomenon never explained—What Agassiz says of the "drifts"—Charles Darwin—Dawson on the "age of the Arctic cold"—The theory of Agassiz—Severity and duration of the cold age—Reasons why we cannot believe the theory—The sun must have ceased to exert his influence during that age—It is in conflict with the Nebular hypothesis—Geologists cannot formulate the theory—Agassiz and Lyell—The Alpine glaciers—A copper bowlder in Illinois—The solution in Genesis—The sudden upheaval—An event beggaring all description—Direction of the ocean currents—Testimony of Agassiz—The American Encyclopædia—Dr. Hitchcock—Nine indisputable facts—A surrender of the fort—Proof—The invention of four fictions—The next fiction to be invented.

IN the States of Kentucky and Missouri, and in many other parts of the world, there are found what some people call "*lost rocks*," but which are commonly known in geology as "*bowlders*." They are found in different positions, and often standing alone in open plains, at a distance from any other rocks or mountains from which they were originally detached, and carried to their present sites by some force or power, beyond any agency or mechanical force known to natural science.

Some of these lost rocks or bowlders, weigh more than a thousand tons; but they are of various sizes, and are found all over the continent—on the sides of

mountains and hills—in the beds of rivers, and often in the middle of open prairies. Agassiz speaks of some of these bowlders, that had been carried southward for a distance of five hundred miles from their original locality. They are composed of copper, and as they are in a southeast direction from the copper region of Lake Superior, it is certain they were transported from thence. By what mechanical force were they carried such a distance, and left standing, solitary and isolated, in their present positions?

There are what are called the Richmond bowlders, in Western Massachusetts, which have been a great puzzle to geologists. There are three ranges of hills, running east and west, and crossing these at right angles, are seventeen ridges trending southward. These ridges are made up of bowlders, which can be traced back to the three hills a distance of more than twenty miles. The sides and summits of the hills in the line of the pathway, along which they were moved, are scored and scratched through that entire distance. How was this done? And what was the tremendous force which ploughed out these hollows, and tore away the solid rocks, transporting them miles away from their firm positions in those everlasting hills, and dropping them all along in parallel lines, trending in the same general direction a little east of south? How was this done? This was the mystery which geologists could not solve. And hence their inventive powers were called into requisition to devise the *glacial theory*. For it is simply the device of a lively and fruitful imagination.

As a general rule, bowlders are the same in com-

position as the rocks or the mountains from which they have been detached. The quartz bowlder is the most common. Bowlders are found in all alluvial districts. The Mississippi Valley is full of them. In all cases, they present an appearance as if the edges and angles had been worn off by the friction of water and gravel, in their passage from one place to another. We find bowlders on the tops of high mountains—on their soil-covered sides, and in level plains. And it is a pertinent question, how were they rounded, and when? Before they started from their distant homes, on the journey, or after they reached their present locations? The singular phenomenon exercised the minds of scientists, for a long time, most intensely. Have they found the cause? We shall see.

In Switzerland, Agassiz speaks of bowlders of immense size, some of them containing 40,000 to 60,000 cubic feet, and elevated 6,000 feet above the plain, on the slopes of the Jura Mountains. At a prehistoric date, they were carried across that plain from the summit of the Alps, by some unknown force adequate to the result. When and how did the wonderful phenomenon occur? Agassiz answers, that it was by the action of glaciers. But he goes on subsequently to say:

"Causes now operating, are not sufficient to produce all the geological phenomena of past ages, Lyell to the contrary notwithstanding. Mountain ranges could not be produced without revolutions which are not to be measured by causes now operating. These will explain a variety of phenomena, but are not adequate to account for the present aspect of the globe."

There is both sound common sense and sound philosophy in that remark. But, with due deference, I would say, that though glaciers may force rocks measuring 60,000 cubic feet down the sides of a mountain, there is neither sense nor philosophy in saying that glaciers could force rocks of such immense size, 6,000 feet up the slopes of a mountain. That would be in opposition to the laws of nature, especially the law of gravitation.

There is another phenomenon in the appearance of the earth's surface, which has been a puzzle to geologists, and which has exercised their minds as much as the bowlders—I refer now to what they term "*the drifts.*" Agassiz thus speaks of them:

"In the so-called drifts (a superficial deposit to the tertiaries) there are found, far to the south of their present abode, the remains of animals whose home is now in the Arctic, or the cooler part of the temperate zones. Among them are the musk ox, the reindeer, the walrus, the seal, and many kinds of shells characteristic of the Arctic regions. The fossil remains of the reindeer are found in large quantities in the drifts about the neighborhood of Paris, and even at the foot of the Pyrenees. European shells now confined to the Northern ocean, are found as fossils in Italy."

When were these things drifted from the Arctic region to the southern parts of Europe and North America, and how were they drifted thither? The very same phenomenon in regard to the transportation of plants of the Arctic regions to more southern climes, led Charles Darwin to say:

"It is indeed a remarkable fact to see so many of the same plants living on the snowy regions of the Alps or Pyrenees, and in the extreme northern parts of Europe. But it is more remarkable that the plants on the White Mountains in America, are all the same with those of Labrador, and nearly all the same with those on the loftiest mountains of Europe."

Nearly all geologists have had something to say about the drifts, and seemed equally perplexed at the strangeness of the phenomenon. From the stand-point which we now occupy, it seems almost incredible that these accurate scholars and masterly intellects, should have gathered up the facts as they did, and then failed to reach that only and inevitable conclusion to which revelation, and the facts of their own science pointed them. They seemed confounded—utterly at their wits' end. But instead of accepting the truth, they invented a theory, which, I venture to say, will hereafter be regarded as quite equal to any of the myths ever invented by any of the old pagan philosophers.

Now let us look at that theory—the glacial theory. Geological writers differ in their views on the subject. They agree, however, as to the fact that there was a cold age at some epoch in the past. But as to the cause, the date, the duration, and the termination of that age, they are perfectly at sea, without chart or compass. I will give a brief extract, touching on the glacial theory from Principal Dawson of Montreal, a Christian geologist. It is from his lectures to the students of Union Theological Seminary, in which he says:

"At the end of the Pleiocene, began the great age of the *Arctic cold*. The land by gradual subsidence began to lose its fair proportions; the seas became invaded by Northern ice; snows began to settle permanently on the hill tops, and glaciers to plow their way towards the sea. The world, after all its changes, seemed about to fall into ruin, and multitudes of species of animals and plants either perished, or were driven to those southern portions of the continents, which still remained habitable. But this great change was only a long winter, during which the ploughshare of God was to prepare the world for a new spring."

This does not differ very materially from the following, in one of the lectures of Agassiz, in which he says:

"The glacial period was, comparatively, recent, subsequent to a time when our earth was much warmer than it is now; when the rhinoceros inhabited our western prairies, and the mastodon and elephant roamed over Siberia and the high latitudes of this country. That this tropical state of things was changed rather suddenly, is proved by the fact that mammoths and other large animals, have been found frozen in the ice of Siberia, with the flesh and skin still on them, so well preserved that the wolves and dogs will eat the flesh. A great climatic change came on very suddenly; these animals were frozen in the ice, and have remained frozen ever since." "A great cosmical winter set in over the globe, which extinguished life to an extent not yet determined. This statement has not the value of a barometric observation, but still has a value, and is not a wild assumption based upon no premises."

As to the severity and duration of this supposed glacial winter, Agassiz says further:

"To be within bounds, we will assume that our continental glacier moved as fast as one hundred feet per year. At this rate, it would take fifty years for a bowlder of Lake Superior copper to have travelled a mile; and to have travelled to its utmost southern limit—500 miles, would take 25,000 years; but it probably took a much longer period."

This is a specimen of the calculations made by these scientists. The opinion generally entertained by them is, that, the glacial period lasted forty to fifty thousand years. As to the cold of that period, Agassiz says:

"At the height of the glacial period, a climate similar to the climate of Labrador must have prevailed at the mouth of the Amazon"—which we know to be at the Equator. And if the climate of Labrador prevailed at the Equator, what must it have been in these temperate zones, where we are living? All over these tropical regions, as he says again, "the snows must have been 10,000 feet in depth."

I have now tried to give the outlines of this theory, as stated by two of the most distinguished scientists of our times. And they say, that this age came on suddenly, just after the mildest and most joyful age the earth has ever known, as to its climatic conditions. The cold age succeeded suddenly, and the animals and the plants of that mild and joyful age were suddenly and totally destroyed! And where was God all the time? Well, this was "God's ploughshare," as a Christian geologist says, "to prepare the world for a

new spring"—rather a long and severe preparation, we should say, running through a period of forty or fifty thousand years.

If I had a special revelation from heaven, teaching this theory in clear and positive terms, I suppose I should believe it. But in the entire absence of any such revelation, I cannot believe it. It is abhorrent to my feelings. It seems to blot out both the wisdom and the goodness of God. It recognizes but a single attribute in the character of God—His power—even if it recognizes a God at all. Look at it seriously. They tell us that life and death reigned for untold ages on this globe, before that cold age set in; but that the animals were great megatheria, miso-sauroids and other monsters of the deep—that these dumb animals, without reason or intellect, were the sole occupants of this globe for untold ages, and that there was not a man nor other intelligent being on earth, who could praise God for his existence, or even know that there is a God. What glory would it be to God, to reign over such a horrid abode?

There are no facts, and no data, neither in truth, nor in geological science, on which to predicate such a theory. I pronounce it a theory, not only in opposition to the moral sense of mankind, but in opposition to all the material laws of nature, so far as those laws are known to us. I shall enumerate now, some of the reasons, why it is impossible to believe this Glacial Theory.

I. And first of all, it supposes that our sun either did not shine at all, during that long period, or that his beams had no genial heat nor warmth in them.

We know that since the age of man began on this earth, the sun has had power to melt the ice and snow, in the temperate and tropical regions, and it never accumulates except to the depth of a few inches or feet, in the winter season. But when the spring comes the snow melts, and the winter is gone. And in the higher latitudes, as far north as Labrador, they sometimes have mild and beautiful summers, and a rapid vegetation, owing to the benign and life-giving influence of the same glorious sun. And they tell us, that, long ages before the Arctic winter set in, the climatic conditions on this globe, were even more favorable than in the present age of the world—and that there existed a tropical flora—tropical fruits, and flowers, and plants—and tropical animals, all over these temperate zones, in that great and favored age of the world, millenniums of centuries before the glacial period began. And what was it which made the mild climatic conditions of that favored age, and the great flora that then prevailed? Surely, it was the radiance of that same sun, under whose benign influence we are permitted to live, and move, and have our being.

How then did it happen that there was such a long interregnum, or interval, when the sun did not shine, or when, if he did shine, there was no warmth in his beams? They admit that several hundred thousand years ago, he gave out so much light and heat to the earth, as to cause a more luxuriant and glorious vegetation, than has been known in any age since. And then, after making this admission, they affirm that, suddenly, the sun withdrew his influence—so entirely withdrew it for

a half century of millenniums, that all animals and plants must have perished with the cold—and then, after that long period of unfriendliness and cruelty to our forsaken world, he looked down in kindness, and began to pour forth his mild radiance once more, perhaps, just as suddenly as he had withdrawn his life-giving influences and has been performing his duty ever since.

This is what they believe. Now, how do they explain these things? They will not believe the Bible record, which says, that the sun hasted not to go down for the space of a whole day, at the command of Joshua, because that would be a violation of Nature's laws. Yet they know that there are no natural causes which will account for the occurrence of that long cosmical winter. They know that if it ever occurred at all, of which there is no proof, they would have to admit that it was a change in the history of the earth, in violation of all the known laws of astronomical science.

Some few have tried to account for that cold age, on the supposition that the axis of the earth had got turned in some wrong direction. But a moment's reflection, as Agassiz suggested, should have satisfied them that this would make no material difference in the amount of heat received from the sun, since he always shines on one-half the earth's surface, and, therefore, no matter in what position the axis may be, one-half of the earth's surface must be always receiving the sun's light and heat.

But the fact is, the poles of the earth's axis were not changed. The cold of the long winter, as they admit, prevailed in the northern and southern hemi-

spheres at the same time. This is a demonstration that there was no change in the direction of the poles. The most reliable astronomers admit the fact. Principal Dawson says: "Geology and astronomy concur in assuring us, that the poles of the earth have remained unchanged." And I am perfectly willing to take the word of Dr. Dawson, since he is such a zealous advocate of the glacial theory. Dr. Dawson admits that the causes of the long cosmical winter have never been explained. Every writer whom I have read on the subject makes the same admission.*

For my part, I can imagine a cause, but only one cause which would account for it in a satisfactory way; and that would be to say, that our planet—the earth—in a prehistoric age, tried the experiment of being a comet instead of a planet, and suddenly wheeled out of its orbit, and by an eccentric flight, passed away off beyond the path of Jupiter and Neptune, where it was almost entirely beyond the sun's influence, and after an absence of some forty or fifty thousand years, when all the former races of animals and plants had been destroyed by the cold, the planet took another sudden notion and wheeled back again into its former orbit, in which it has been making its circuits regularly around the sun ever since.

Now, perhaps, it is possible that such a thing might have happened. And if it did happen, it would account for the phenomenon of the cold age in a very satisfactory manner. But none of the philosophers as yet have suggested the solution I have now given. I have made the suggestion, and if they choose to adopt it

*Read carefully, the supplement at the close of this chapter.

and to use it, as the most plausible and rational mode of accounting for the glacial period, I am sure, I will make no objection.

II. If they could prove, that, there had ever been such a long cosmical winter, as the glacial theory supposes, it would effectually demolish "the *Nebular hypothesis.*" This theory, formulated by La Place, and advocated by Proctor and other distinguished astronomers, supposes that the earth, as well as the other celestial bodies, was originally a mass of heated nebulous matter, which has been gradually parting with its heat, and slowly contracting as it cooled, from a bygone eternity. The advocates of the glacial theory, believe the nebular hypothesis also, although the one directly contradicts the other. It is impossible, by any sort of reasoning, to reconcile the two hypotheses. If the cooling process has gone on steadily from the first, the earth should be cooler now than it was many hundred thousand years ago, when, they say, that cold age prevailed. But the earth is much warmer now than it was then. Why is this, if the earth was, originally, a globe of fire, or a melted incandescent mass of matter, which has been parting with its heat in every age? The two theories conflict. They cannot believe them both. They must abandon either the glacial theory or the Nebular hypothesis. Which will they give up, and which will they choose to retain? But I say, the one or the other must go.

III. Again I would say, that there is such an air of the ludicrous, or the ridiculous surrounding this whole glacial theory, that it never can meet with the general consent of mankind. Indeed, it is quite

amusing to notice the way that one scientist speaks of another, in reference to the matter of the cold age. Thus, Agassiz says of Lyell; and we admit that they were both very eminent scientists:

"Lyell, in his antiquity of Massachusetts, attempts to explain the Richmond drift phenomenon. He attributes the whole thing to icebergs, and his explanation involves as complete a physical impossibility as can be conceived. Beware of explanations made to suit a particular case, especially when the explanation requires an ocean that could not exist, and icebergs that move as icebergs are never known to move. Conceive seventeen rows of icebergs moving along in stately and well-ordered ranks, and all dropping, at particular points, their load of rocks."

Agassiz seemed to amuse himself, and perhaps, very properly, at the idea that the bowlders should get mounted so handsomely on the backs of the icebergs, and travel on them so majestically till they arrived at certain points, and then be let down so gracefully. He thinks it would be a physical impossibility, and something that could not have happened. And he was right in this conclusion. But just think how completely Lyell could have turned the laugh against Agassiz, if the opportunity or the occasion had been presented to him. For the fact is, that the theory of Agassiz implies as great a physical impossibility, as the one advocated by Lyell, and has just as much of the ludicrous in it. He might have said, for example:

Conceive a glacier of snow and ice covering the

continent ten thousand feet in thickness, frozen fast to the earth, and yet, moving or sliding down from north to south over uneven surfaces, over a level extent of country, and even hills and mountain tops, without any pressure or force to carry it along in its journey, and in opposition to the great law of gravity, one of the essential laws of matter. Agassiz, doubtless, had his mind, or his thoughts on the Alpine glaciers. They descend from a height of 15,000 feet, and the superincumbent weight which such an elevation must give them, forces them downward toward the plain below. Yet, with all that weight, they never can advance farther in the plain than about twenty miles—and they could not even travel so far, were it not for the constant thawing going on in the valleys. On this point, Lyell gives the true philosophy. He says:

"If a glacier be twenty miles long, and its annual procession about 500 feet, it will require two centuries for a block thus lodged upon its surface to travel down from the higher to the lower regions, or to the extremity of the icy mass. This terminal point remains, usually, unchanged from year to year, although every part of the ice is in motion, because the liquefaction by heat, is just sufficient to balance the onward movement of the glacier, which may be compared to an endless file of soldiers pouring into a breach, and shot down as fast as they advance."

I think the Alpine glaciers throw some light on this glacial theory. I will state a mathematical proposition, to be solved or worked out by scientists who believe in the theory—if the superincumbent weight of the Alpine glaciers, and the liquefaction in the valleys

below, cause them to descend from the height of 15,000 feet, and to advance twenty miles in the plains below, but never any farther, how high would the mountains have to be, and to what extent would the liquefaction have to go on in the south, to have made those glaciers, in the glacial epoch, travel 500 miles, or from Lake Superior to their present position in Southern Illinois? If there were no mountains—and certainly there were none—and if there was no process of liquefaction, as there could not have been in that cold age, you must see, their theory has nothing to stand on. It is a dream and a delusion.

And now let us bring Genesis to the solution of the great problem, connected with the bowlders and the drifts.

One who has ever witnessed the scene that nature presents at the Falls of Niagara, may have a faint idea of the power of the watery element, when raised only a few feet perpendicularly above its level. But the Niagara is only a rivulet when compared with the ocean, and the descent of 150 feet is nothing to the height to which the oceans must have been raised above their level on that day, when the foundations of the great deep were broken or heaved up. The effect of that sudden upheaval, must have been such as to beggar all description, causing the mountain billows to begin to boil, and rage, and to fall back on the dry lands, above which they had been raised. The very thought of what must have occurred on that awful day, appalls and overwhelms our feeble imagination. But it is no fiction—no idle dream, or creation of the fancy. It is recorded in the Bible. It is in the written

traditions of the oldest nations. It is attested by science. Geologists point to innumerable monuments that prove it.

But in what direction would the waters of the ocean, when elevated, begin to flow back? The law of gravitation would compel them to fall towards the lands, which had not been elevated, and which remained depressed thousands of feet below the level of that upheaved ocean. The water would flow over those lands until the level was restored. The commotion among the angry heaving billows, must have been in proportion to the volume of water, and the depth of the fall. What pen or pencil can portray, or adequately describe the effects? If there were broken fragments of granite rock, they would be forced or swept along over the rocky beds, by the resistless mountain waves. No matter if they weighed thousands of tons, in such a moving ocean of water, they would have been borne along as mere pebble-stones. And if they had sharp angles and edges, of course, they would be broken and rounded off in passing hundreds of miles over the rocky pavements of the ocean.

The waters from the North American continent, when upheaved, would naturally flow towards, or in the direction of the Atlantic and Gulf regions, as these were formerly lands. This general direction would have been from N. W. to S. E., which corresponds to the course of the bowlders and the drifts, as recorded in the observations of geologists. This is a fortunate coincidence, as I think it comes nearly to a demonstration, as to the true cause of those phenomena. Agassiz says, in these words:

"The North American glacier was uninterrupted from the Arctic Ocean to Alabama. The general tendency of the ice sheet over the States bordering on the Atlantic Ocean, was to move N. W. to S. E."

In the American Encyclopædia, article, "Bowlders," it is said that:

"On the bare granite summit of Mount Katahdin, the highest mountain in Maine, at an elevation of 3,000 feet or more, above the surrounding valleys, pieces of limestones, containing fossil shells, are found, though no ledges resembling them are known, except many miles to the northwest, and at a much lower level."

Of course, these blocks of limestone, or bowlders, could not have been placed on the summit of that mountain, by the action of glaciers, as they cannot move up, but only down an inclined plane. They could only have been rolled and lodged there by the force of the mountain waves, when the ocean was above the tops of that mountain, and pouring itself from the upheaved northwest continent upon the Atlantic lands.

In the work of Dr. Hitchcock, on geology, there is a passage which throws a good deal of light on this whole subject, in which he says:

"Furthermore, scattered over and among the coarser terraces and beaches, we frequently find large angular traveled blocks, that seem to have been transported by an agency somewhat different from that which sorted and comminuted the terraces and the beaches. But in all cases, we find the terraces and the beaches above the great mass of the drift; and it cannot be doubted that the former have resulted from the re-

arrangement and comminution of the latter. Now, how has this happened? It seems to us that no one can examine these phenomena in New England, and Mr. Chambers' recent work on ancient sea margin, shows the same in respect to Great Britain, without being satisfied that water has been the main agent. For what other agent can sort and arrange with a level top, and in horizontal layers, gravel, sand and clay, over wide surfaces? If I mistake not, I have already ascertained the existence of some of these ancient sea beaches, in the Hoosac range of mountains in Massachusetts, not far from 2,000 feet above the present ocean, and 2,500 feet in the White Mountains. Also, some river terraces upon mountain streams, as much as 1,800 feet above the ocean. The conclusion is, that the ocean must have been over the continent, as high as we find the terraces and beaches, and that they were formed by the lifting up of the continents, or by the retiring of the ocean."

This was what Dr. Hitchcock wrote, and this was the conclusion to which he came. And I see not how any one, on a careful study of the same phenomenon, could have reached a different conclusion. The agency which levelled, as with a level top, the wide surfaces of sand and gravel, must have been water. The same agency must have transported the traveled blocks, and left them standing scattered here and there, just where the subsiding waters ceased to have power to transport them farther. That is the reason that all the lost rocks or bowlders are found on the continents in their present positions. The commotion of the waters must have been greatest when the upheaval first took place. But as the ocean emptied itself, and the waters subsided more and more, the commotion

would decrease, and the larger blocks would be dropped first; then smaller ones would become stationary; and then, the smallest; and when the waters were nearly all drained off, the settling, eddying currents would smooth and level off the surfaces of sand and gravel to the level of a smooth floor, till it became dry. This is the way that water acts. The same phenomena as those described by Dr. Hitchcock, may be seen in the bed of almost any river at low-water mark. There are the sand-bars, levelled and smoothed off, as with a level top, when the current of water had subsided, to an exact level with the sand bottom. And there are the roots and logs lodged there, when there was a larger volume of water flowing over that bottom, but not large enough to carry them entirely clear, and so they became lodged and fixed in that shallow bottom, and, of course, sand and gravel would be washed up about those logs and stumps, just as Dr. Hitchcock tells us, that he finds large traveled blocks scattered about in the coarser drifts, partially buried in the gravel and sand.

I have now given you the solution furnished by Genesis, as to the origin of the bowlders and the drifts, found in so many places on the surface of the earth. There is no necessity for the glacial theory. The same solution accounts, also, for the appearance of the grooves and scratches found on the surfaces of hard ledges of rocks. The beds of the ocean, when upheaved, must have been comparatively soft at the surface, consisting of the latest depositions in the water. But they have been hardened since the upheaval into limestone and other species of rocks. Of

course, the granite fragments, in passing over those surfaces, when comparatively soft, would make scratches and grooves which would remain after those surfaces became hard. But some geologists pretend to believe that the scratches and deep grooves were made in the solid rocks by icebergs or glaciers, not in the ocean beds when they were soft, and could easily be scratched and torn, but on the dry land, when the rocks were already in a solid state. Others may believe in the possibility of such a phenomenon, but I cannot.

Now suppose for a moment we put aside theory, and look at the facts. And for this purpose, I will endeavor to present a sort of panoramic view of some of the more important facts in the case. It is equally the concern of the sceptic as of the Christian to know the truth, since the belief of false theories can never make them true.

I. The first fact is, that the present continents were once seas. No one can doubt this. Geologists themselves prove it. We have obtained this fact from them, and it is now a part of their science.

II. Another fact not to be questioned, is, that these continents—Europe, Asia, Africa, and America are now dry lands—not oceans, as they once were. We are living on them. Therefore, the waters never returned upon them.

III. As the waters were not annihilated, but are still in existence, they must constitute the present oceans —the Atlantic, the Pacific, and the Indian oceans. Therefore, the sea and land have changed places. This is a fact. There is no theory about it. Geolo-

gists affirm it—all who are worthy to be considered as authority—such as Humboldt, Cuvier, Beaumont, Deluc, Dolomieu, Lyell, Hitchcock, Marsh, and others.

IV. Another fact is, that this revolution or change in the surface of the earth, was of a comparatively recent date. Moses puts it about 4,300 years ago. Cuvier says, it was not over 5,000 or 6,000 years ago. The age of some of the great rivers, as the Nile, the Niagara, and the Mississippi, shows according to the most exact explorations that have been made, that the upheaval could not have occurred over 5,000 or 6,000 years ago. And all geologists, such as Prof. Richard Owen, concur in the opinion, that it took place at a comparatively recent geological date.

V. Another important fact is, that the change was brought about suddenly, and by a convulsion of nature. Moses says, that the Almighty broke up "the fountains," or the foundations of "the great deep" on a certain day—namely, the seventeenth day of the second month, and six hundredth year of Noah's life. We know of no distinguished geologist, who denies the suddenness and the convulsive nature of this change, except only Hugh Miller. They say it was a sudden revolution. Beaumont says, and others agree with him that it was so sudden as to cause a temporary and universal deluge, concerning which there are so many traditions, causing the destruction of all life on the globe. The fact is unquestioned.

VI. Another fact is, that fragments of granite rock, that could only have come from the bottom of the seas, weighing thousands of tons, have been found in different localities, that had been transported great

distances over level surfaces. This is a fact. And some mechanical force adequate, must have driven or carried them. This phenomenon has not been, and it cannot be explained, except on the theory of the upheaval of the ocean beds. The agitation of the mass of waters, thus suddenly elevated, would produce exactly this phenomenon, as every scientist must well know. But no other mechanical agency can be conceived, adequate to produce such a result.

VII. It is a fact that fossil remains of animals and plants, belonging to high northern latitudes, are found in drifts in southern latitudes, in Europe and America, which could have changed their places only by the agency of water. This is a fact well established by the researches of many geologists. And it is readily explained, on the theory that the antediluvian seas were upheaved, and the waters flowed off towards the South, in the direction that the law of gravitation required them to flow, as before explained. But the phenomenon admits of no other scientific explanation.

VIII. Our eighth fact is, that since the commencement of the historic ages the laws of nature have been uniform, and there has been no departure from the original laws inscribed on the heavenly bodies, which secure that the seasons—summer and winter, seed-time and harvest—shall follow one another in regular succession. But the glacial theory contravenes all the known principles of our system of astronomy.

IX. Another important fact, as learned from geologists, is, that long prior to what they call the glacial period, the seasons were successive, and the climatic conditions of this earth were the mildest and most

favorable known in any age. They believe this, and also believe the nebular hypothesis, though they must admit that the two beliefs are contradictory.

I consider this glacial theory as not only the latest, but the most marvellous story or fiction that ever yet originated, as they say, from the perpetual molecular motions going on in the region of an evolutionist's brain. And yet, I know very well there are those who say that they believe this glacial theory.

Surely, they must have known, when they invented this theory, that it was unphilosophical, and that it was contrary to nature, and to all the known laws of nature. Who so much as these philosophers, talk of the uniformity of nature's operations? When they would put themselves in opposition to the Bible, or attempt to controvert the doctrine of miracle, they fall back on our experience of the uniform action of the great laws of nature. This was the argument of Hume against the recorded miracles of the Bible, which seemed for some time to give serious alarm to the friends of truth, and was regarded by the adherents of the cause of infidelity as an invincible argument. What is the reason that they have struck their own flag and surrendered the fort? They don't believe now in the uniform action of nature's laws. This was their strong argument for a whole century. But I say they have surrendered the fort, and they don't believe in the uniform action of nature's laws now. Look at the proof of this.

They have had the sagacity or the ingenuity to invent no less than four fictions or theories, all of which suppose that the operations of nature have been going

on through indefinite ages, in violation of all the known laws of nature. Now, I know that is saying a good deal, and yet I don't want to say anything that I cannot establish. One of these theories—the nebular hypothesis—as proved in a previous chapter, is in opposition to all the known laws of matter, as gravitation, inertia, fusibility, affinity, etc., and has circular motion of the heavenly bodies, without any such thing as either a centripetal or a centrifugal force to create these compound motions. Is not that enough?

Then there is their theory of the vast geological ages, which is not only self-contradictory, but which blots out Sir Isaac Newton's great law of gravitation, which inheres in every atom of matter in the universe of God.

And then, they invented the theory of evolution—did they not? And that supposes that a man can trace his pedigree to a monkey, does it not? That teaches that all the men, and all the animals, and all the trees and plants in the world, came originally "from the invisible loins of an invisible monad"! I quote the very words of one of the teachers of evolution. But, I ask if this is in accord with what are known to be the operations of nature's laws? Was nature ever known to do such a thing—to cause one species to produce another entirely different? Yet they profess to believe that—to believe that every species in the world has come from a single species, or from one original germ. And have they not surrendered the old fort—the old uniformitarian theory?

And then, last of all, they invented this glacial theory, which is certainly in opposition to the known

laws of nature, inasmuch as it supposes that a glacier may not only slide down a mountain side, but may even slide 6,000 feet up the sides of a mountain, forcing up with it granite rocks weighing thousands of tons.

It is impossible to believe that. That would be a feat quite equal to any of the miracles recorded in the Bible. We can believe the doctrine of miracle, because God is omnipotent, and He can do whatever He pleaseth. But we cannot believe that glaciers can move or slide 6,000 feet up the slopes of a mountain, carrying up fragments of solid rock weighing many thousands of tons. It would be taxing our credulity a little too severely to ask us to believe that. And we must say, "*Judæus credat, non ego.*"

What will be their next invention, or their fifth hypothesis, is for the future to develop. But it would not surprise us much if they should make the discovery, how life is evolved from matter. They are working hard to solve this problem, and it is understood that one of them, who was recently president of the convention of scientists which met in Boston, made a remark to the effect that "*God is dead*," and that the problem is very nearly worked out as to how animal life may be generated from matter, independently of the aid of Deity. And when they shall get it entirely worked out, it will probably be proclaimed or made known to the whole world. And then, we may expect that soon thereafter, they will invent patent machines for the purpose of generating life, and generating all sorts of living animals. It is probable they will get to this point before they come to the end of their folly,

and then perhaps the bubble will burst, and men will begin to come to their senses again.

A SUPPLEMENT.

In a late number of the "London Quarterly Review," there appeared an elaborate article on the glacial epoch, which offers the most recent and, perhaps, the most ingenious attempt yet made to explain the riddle. It is based on the known eccentricity of the earth's orbit around the sun. Astronomers say, that the earth is 3,000,000 miles nearer the sun in winter than it is in summer. And they have made the calculation that when the precession of the equinoxes, and the revolution of the apsides occur about the same time, which must happen about every 10,500 years, a change will take place, which will bring the earth 3,000,000 miles nearer the sun in summer than in winter. And by calculations extending as far back as 3,000,000 years, they have ascertained, so they affirm, that these changes in the earth's eccentricity vary, almost indefinitely, so that the earth is found, at one period, to be 10,000,000 miles nearer the sun in summer than in winter. And they suppose this period to have occurred 210,000 years ago, and to have extended through, probably, 40,000 years—and this was the glacial epoch, as they believe.

This latest theory on the subject, which may be found in the July number of "The Quarterly," for 1879, explains nothing, but like every other attempted theory, leaves the problem just as it found it, unexplained.

I. In the first place, the writer in the "Review" does

not give any scientific reason why, if an eccentricity of 3,000,000 miles makes the earth colder when nearest to the sun in winter, a variation of 10,000,000 miles should make it colder when nearest to the sun in summer. No reason for this is given. It is not claimed that there was any change in the axis of the earth to the ecliptic. Nor is it pretended that the area of the earth's orbit was enlarged. On the contrary, it is admitted that the poles of the earth were as now, and that the earth's circuit has never varied—consequently, the average amount of heat and light from the sun, day by day, and year by year, must have been precisely the same 210,000 years ago, that it is to-day. If, in one period of the sun's history, it has power, in the summer, to melt all the ice and snow accumulated during the previous winter, it must have just the same power or effect in any period of its history.

The writer in "The Quarterly" admits "that it is a remarkable fact, that nowhere in the world, at the present time, are there any extensive lowlands covered with perpetual snow. The Tundras of Siberia, and the barren grounds of North America, are all covered with some kind of summer vegetation; and it is only where there are lofty mountains, as in Greenland, Spitzbergen and Grinnell's Land, that glaciers descend to the sea-level, accompanied by perpetual snow." The writer admits, also, that when the winters were so much colder during the glacial period than our present winters, the summers must have been just as much warmer than our summers in proportion, since the amount of heat received from the sun in that age, taking the summer and winter together, was just equal

to what it is now. Therefore, supposing that a greater depth of snow fell in the winters of the glacial epoch, the greater amount of heat in the summers of that period, would have melted that snow, as easily as the snows of our milder winters are melted by the heat of our milder summers. It is for this reason, chiefly, that the writer in the "Review," rejects the theory of Mr. Croll, who supposes that the ice-cap of the glacial period covered the entire frigid zones, and extended far down into the temperate zones, covering them completely, something as the cup of an acorn covers the acorn from its stem. Such an ice-cap, being thickest at the poles, and equally thick on every side of the globe, at an equal distance from the poles, could never slide southward from the poles. The law of gravitation, as well as the law that governs cold, would equally hold it in its place. No intelligent person could be persuaded to receive that theory, and the writer in the "Review," very properly rejects it.

2. But in the next place, the theory set forth by the writer in the "Review" is not any more tenable than the one he rejects, inasmuch as he requires the existence of highlands, or mountains, in order that there be glacial action. And in this, doubtless, he is right. For we cannot conceive of the existence of glaciers in the absence of mountains, which condense the vapors, and cause the accumulation of snows, which adhering to the sides of the mountains, would tend from their own gravity to descend, especially, when aided in this tendency by the thawing process in the valleys below, as already shown in this VIth. Chapter. But the difficulty in the way of the hypothesis pro-

pounded by the writer in the "Review," is, that there could have been no mountains in existence, during what is called the great glacial epoch, if we are to place any confidence in the latest and most reliable discoveries of scientists. Science must be consistent with itself. It is now one of the admitted facts of geology, that there was a period when the mountains did not exist. And if, as they now teach, they had their origin in the great cataclysm, when the upheaval of the present continents occurred, and sea and land changed places, a recent geological event, having occurred not over five or six thousand years ago as some of them affirm, and if the writer in the "Review" does not entirely ignore these established facts of science, it is illogical to assume, as the basis of his hypothesis, the existence of these mountains 210,000 years ago, which have not been in existence even for ten thousand years. We repeat, that science cannot be inconsistent with itself. One science, or one portion of science must not contradict another. Otherwise, it would be only "science falsely so called."

3. But there is another defect in this latest hypothesis, to be noticed, and that is, it does not account for the suddenness, with which, it is said, that the cold age succeeded the mild and tropical carboniferous age, which had preceded it. Agassiz, who certainly could speculate as wisely as any of our modern scientists, affirmed that the glacial period was not only very recent, but that it came on very suddenly. "A great climatic change came on very suddenly; these animals became frozen in the ice, and have remained frozen ever since." But would the eccentricity of the earth's

orbit, 210,000 years ago, account for these facts? The earth could only approach its greatest eccentricity slowly, and by degrees, through the progress of thousands of years. Of course, if that was the cause, the cold period must have come on slowly, and the animals and vegetables must have gradually disappeared, in which case there would have been, now, no remains found in a state of almost perfect preservation. It is strange that this consideration did not occur to the mind of the astute writer in "The Quarterly," while elaborating his ingenious theory. But there is still another difficulty.

4. In the fourth place, there are phenomena which cannot be accounted for, by local glacial action, even if we admit that the mountains had an existence so long as 200,000 years ago. For example, there are bowlders in the plains of Illinois, that were brought from the copper regions of Lake Superior, a distance of five hundred miles. But there are no mountains—no highlands in that whole region. Here is an instance, in which the problem cannot be solved by the hypothesis of "The Quarterly." And yet, it must be admitted that the mechanical force, which transported those bowlders a distance of 500 miles, where there are no mountains, must be the same as that which transported all the bowlders found on the earth's surface. The same effects must have the same cause. We have seen that Lyell explains, on very scientific principles, the action of the Alpine glaciers, caused by their own specific gravity, and the liquefaction in the valleys below, by which they can travel a distance of twenty miles, but never any farther. But these causes

would be insufficient to account for the transportation of bowlders clear across the valley, and 6,000 feet almost perpendicularly up the sides of the opposite mountain—much less, would they solve the problem as to how the copper bowlders were transported 500 miles, in a region where there are no mountains. The theory put forward in "The Quarterly," has not even the merit of plausibility in its favor.

5. Let us note another objection to this theory, and that is, perhaps, the capital one—it does not—nor does any other theory yet advanced—account for the existence of the bowlders and for the other materials which form the morains found in the pathway of the supposed glaciers. This material is always composed of bowlders, large rocks more or less worn on the edges, pebbles, sand, hardened mud, etc., in an unstratified condition, such as must be supposed to have come from the bed of a river or an ocean, and remaining still in the same state as when the waters flowed off and left them dry land. We have in their writings many such passages as this in the "American Journal of Science":

"The beds of loose material which had been produced by long continued decomposition of the ledges, or accumulated by previous glacial action, together with the thick fluviatile deposits that probably occupied the valleys, were ploughed up by this ice-sheet, and thoroughly kneaded with each other. Very large amounts of detritus were also added from erosion of the rock surface. Fragments of all sizes and in great profusion were loosened and wrenched away, while the ledges were everywhere worn and striated by bowlders and pebbles, which were rolled and dragged along under the vast weight of ice, breaking

up and grinding themselves and the underlying rock into gravel, and even the finest clay."

And with this agrees the testimony of all geologists. All the material marking the pathway of the supposed glaciers, in all countries, is that which comes out of the sea. This fact is so patent that the most of these writers do not hesitate to bring in the action of water, as well as the action of glaciers, to make out fully the solution of their problem. The writer in "The Quarterly" himself says:

"There are also in North America, as well as in Britain and Scandinavia, proofs of the submersion of the land beneath the sea, to the depth of more than a thousand feet, in the latter part of the glacial epoch."

The effect would be just the same, if, instead of the submersion of the dry land a thousand feet beneath the sea, there had been an emergence of the ocean beds a thousand feet above the continents. The action of the waters would have been the same, and would have produced all the phenomena found to exist, and which they have endeavored to account for by glacial action.

But the hypothesis of the "London Quarterly," the latest propounded, as well as all the rest which they have propounded, supposes that the glaciers travelled on the dry land, and not on the beds of oceans or in river valleys. And the cold age came on, right after the warmest and most tropical climate the earth had ever known. Then why should not the glaciers have ground up the mammoth trees which grew in that age, and the bones of the mammoth animals which flourished, and rolled up the rich loam soil which produced

the wonderful vegetation which, they affirm, was peculiar to that "age of plants," and why should we not have some of the remains of those terrene animals and trees in a fossil state in the buried pathway of the glaciers? Did they find nothing on the dry land, in that age which had been so prolific, but bowlders and broken rocks and pebbles and beds of sand, to force and push along in their dreadful pathway towards the sea? Here is a fundamental fact—a primary condition which they never even allude to—in their attempts to throw light on the subject.

6. But again, and in the last place, the writer in "The Quarterly" admits that he is not himself satisfied with his own hypothesis. He admits that it proves too much, and therefore can hardly be said to prove anything. His language is:

"The objection to the theory is, that it accounts for too much. It not only explains all the changes of climate, of which we have evidence, but it necessitates a whole series of changes, of which we have no evidence. The imperfection of all our records of the past is too well known to geologists for this difficulty to have much weight with them; but we may further point out that none of the alternative hypotheses, yet suggested, at all remove this difficulty. If the pole had shifted its place any number of times to bring Greenland and Spitzbergen into warmer latitudes, the Arctic regions must still have been *somewhere*, and the difficulty is, that no Arctic remains are *anywhere* found beyond recent times. And if we postulate any amount of change in the obliquity of the ecliptic (as advocated by the late Mr. Belt), we still have to trust to differences of eccentricity, and of winter or summer in perihelion, and this leaves the problem exactly where it is now. As to the

theory of a cooling earth, even if it were not totally inadmissible on physical grounds, it would leave the glacial epoch itself—the great starting-point in the complex problem of terrestrial climates, totally unaccounted for."

In the above paragraph, there is an explicit statement and admission, that while the hypothesis advocated, founded on the eccentricity of the earth's orbit, is entirely unsatisfactory, all the previous theories, which had been advanced, are equally inadmissible, and inconclusive, leaving the problem of the glacial theory "totally unaccounted for." Let the editor of the able "Quarterly Review" study carefully the facts in the case—the nine facts enumerated in this chapter, and we believe he will be convinced. Let the facts be admitted, and we see not how the conclusion can be avoided. They are submitted, without the slightest misgiving, to the candid and impartial judgment of the learned world.

CHAPTER VII.

The Carboniferous Age; Shown to have been Identical with the Antediluvian Age.

The proposition to be proved—Preliminaries—Composition of coal—Where the vegetable matter grew—Conflict of opinions—Miller's compromise—A *reductio ad absurdum*—Marine vegetation—Testimony of Humboldt, Oken, and the author of "*Vestiges of Creation*"—Four corollaries—What Agassiz said—What Proctor said—Coal beds formed in the sea from marine vegetation—Conditions of matter to form coal not possible on dry land—Chemical action in the formation of coal—A universal law—Examples—Rocks and ores crystallized—The down on the flesh of a babe—Shell limestones—Views of Prof. Dana and Sir Charles Lyell—A curious mistake of Huxley—Demonstration from the chalk line—What Huxley said—Cause of the breaks in the chalk line—Real state of the case—Dana's testimony—No fossils of land animals or plants found in the coal—Prof. Ansted—The Philadelphia *Press*—Argument summed up—Is geology a science?—The rage for fiction—Conflict between truth and error.

WHEN Hugh Miller began his geological investigations, he was a devout believer in the Mosaic cosmogony, and wrote and published the "Old Red Sandstone," and "Footprints of the Creator," before his views had undergone any change. After his conversion to "science falsely so called," he arbitrarily substituted for the six natural days of creation, as given by Moses, the following geological names or periods, viz.: for "the First day," "the Azoic period;" for "the Second day," "the Silurian period;" for "the Third day," "the Carboniferous period;" for "the Fourth day," "the Triassic period;" for "the Fifth

day," "the Oolitic period;" for "the Sixth day," "the Tertiary period."

These are the primary geological divisions. These, again, were all subdivided into smaller periods. The proposition I shall undertake to establish in this chapter is, that "the Carboniferous age" was "the antediluvian age." It was then that the plants and trees grew in the seas, that formed the coal-beds, from which all our present supplies of coal are derived. As introductory to the elucidation of this proposition, however, the consideration of several preliminary points is necessary.

1. In the first place, we must look at the composition of coal. What is it? What are the constituent parts of coal? When chemically analyzed, we find that it consists of ninety parts pure carbon, six parts water, and four parts vegetable matter.

2. Where did this vegetable matter—the one twenty-fifth part in the composition of coal—grow? Geologists differ in opinion on this question. Some think that it grew in the seas; others that it grew on the dry land—but the greater number are of the latter opinion. Hugh Miller, who always wanted to be original, invented a new theory, which, on account of his great celebrity, I suppose, has been adopted by Principal Dawson, and several later writers. I will give the theory in Miller's own words. He says:

"For, however, such repetitions of alternately felted and fissile ripple-marked strata, as we find in the neighborhood of Thursa—repetitions carried on hundreds of feet in vertical extent, we require yet another condition of gradual subsidence in the general crust, which can alone account for the fact, so often pressed

upon the geologist in exploring the coal measures, that, in deposits thousands of feet in thickness, each stratum in succession had been down in a shallow sea."

"In exploring the coal measures"—we know what geologists mean by coal measures. They mean fields of coal, where the coal is found in layers, or successive strata, one above another. Some of these layers of coal are only a few inches, and others, several feet in thickness. And the layers are separated, one from another, by some other substance, usually of limestone. There is a stratum of coal, and then a stratum of limestone, and then, upon that, another stratum of coal, and so on, in succession. And sometimes, there are as many as thirty of these successive layers, or even more, occupying hundreds of vertical feet in height.

Miller wanted to reconcile the conflicting opinions of geologists, that the vegetable matter in the composition of coal grew in the water, and that it grew on the land, by this new theory that the matter grew on the land, but that it was deposited in the sea to be formed into coal. This was an original idea with Miller. Miller was a great reconcilist, as we have before seen. Let us look at this new theory. I don't remember to have seen it advanced by any earlier writer. But it is certain that Principal Dawson has borrowed it from him. I cannot say whether the invention of the theory carries the science up to the climax of the sublime, or down to the ridiculous—the reader will have to determine that, when he shall understand the working of it.

It is computed, that, in some parts of England, there

are thirty layers of coal, which, according to Mr. Miller, were successively laid down in a shallow sea; and that these shallow seas were produced by a gradual subsidence of the general crust of the earth. Of course, there must have been thirty subsidences; and for old England to have got back to her proper place again, there must have been thirty corresponding emergences. How were these changes effected?

Mr. Miller affirms that each of these subsidences was *gradual.* But how could he know whether it was gradual or sudden? If we understand the theory, there was a Carboniferous age—"the great age of plants," Mr. Miller calls it—when the mighty forests grew, which afforded the material out of which the first or the lowest coal-bed was to be formed; but this had to be deposited in a shallow sea, in order to form the coal; and to meet this condition, a subsidence had to take place—a gradual subsidence. But how long did this subsidence or first depression of the general crust continue? This is another feature in the theory that was left unexplained. But the inference which Mr. Miller must have designed, was, that it should continue just long enough under water, for the bed of coal to be formed out of the first trees which had been deposited.

We know in our historic times, that trees immersed in water, are not changed into coal in a thousand years. But still, they might be in a vast geological age—in millions or billions of years—who knows? Suppose we admit this—then, when the first bed of coal had been formed in the shallow sea, what next?

Why, to have the second stratum of coal, there must be another luxuriant growth of forest trees. But as they could grow only on the dry land, according to the theory, there must be an emergence ; and so old England gradually rose again out of the sea, and the land appeared; and in the course of another vast age, there was another forest of trees, and this was the material for the second bed of coal. But, as this material had to be deposited in a shallow sea, for the second layer of coal to be formed, another gradual subsidence was necessary, and old England sunk again gradually beneath the ocean waves. And this process has been going on, we are asked to believe, till thirty of these alternate subsidences and emergences have already succeeded each other, requiring the lapse of ages, which can be counted only by periods of billions and trillions of years.

And, perhaps, old England may now be getting ready for another similar subsidence or submersion—who knows? Why should she stop making coal, after having formed thirty beds, and not go on to form the thirty-first bed? If this is the course of nature, why should not nature continue in the course she has been pursuing for billions or trillions of years? But the wonder is, that the subsidences should all be gradual. One would naturally suppose that the granite foundations, which form a portion of the crust, having been so often broken, in order to admit of these subsidences, could no longer stand the tension, but would let England drop clear down to the lower regions, never to rise again! That would be a fearful end!

Thus have I endeavored, with all the fairness possi-

ble, to analyze Mr. Miller's theory, and it amounts to a complete *reductio ad absurdum*. This is all the refutation of it that is necessary. It was the result of his effort to reconcile conflicting opinions.

3. A third preliminary consideration, relates to the system of vegetation belonging to the sea, as distinguished from terrestrial vegetation—is there such a system? Every geologist knows that there is. And now we are coming to the merits of this controversy, touching the Carboniferous age.

A thorough investigation will show, that the earth, which originally stood in the water, was as prolific of vegetable life, as the earth which stood out of the water. Indeed, geologists argue that all vegetable life began in the sea. They tell us that the sea is more capable of sustaining life than the land. What does Humboldt mean, when he says:

"The floras of the islands of the Atlantic region, between the gulf weed bank and the old world, are fragments of the great Mediterranean flora, anciently diffused over a land constituted out of the upheaved, and never again submerged bed of the shallow meiocene sea. This great flora in the epoch anterior to, and probably in part, during the glacial period, had a greater extension northward than it now has."

Humboldt, in this passage, had no reference to any system of terrestrial vegetation. The great flora of the Atlantic region, and the Mediterranean flora that extended far northward, were wholly of a marine nature. They grew in the water. And every geologist has just about as much to say concerning the plants and trees that grew in the ancient seas, as

about fishes, and the other animals that flourished in the waters.

If the question be, which is the more capable of sustaining life, the sea or the land—we know how the geologist would answer. The oceans are more densely populated than the dry land. Prof. Oken, a noted German naturalist, said: "All life is from the sea."

The author of "The Vestiges of Creation" said:

"The electric spark, escaping from the wild elements around it, struck life into an elementary and reproductive germ, and sea plants, the food of animals, first decked the rude pavement of the ocean. The lichen and the moss reared their tiny fronds on the first rocks that emerged from the deep."

There is, then, a system of vegetation peculiar to the sea—a marine vegetation. Vegetation began first in the sea. This is what geologists teach. I think, they would all agree in these four propositions, viz.:

1. That there is a greater amount of life in the sea than on the land;

2. That the conditions of animal life in the sea, and on the land, are essentially different;

3. That in the sea, there is as great, or even a greater amount of vegetable life than on the land;

4. That, as with animal life, so with vegetable life, the conditions in the sea and on the land are essentially different.

The sum is this. There is a system of marine vegetation, now going on in the sea—and which has been going on from the beginning—richer and more luxu-

riant than any terrestrial vegetation. As the coal was formed in the seas, it must have been formed from this marine vegetation, not from terrestrial vegetation. Agassiz says of the age, when the coal beds were formed:

"There was an age, in the physical history of the world, when neither great depths nor lofty heights diversified the surface of the earth—when both the animal and vegetable creation, however numerous, was inferior to later ones, and comparatively uniform in character—when marine cryptogams were the highest plants, and fishes were the highest animals."

Agassiz tells the exact truth, so far as this description applies to these present continents. For they were then under water. They were then the ocean beds, as I have shown in a previous chapter. Of course, while the seas prevailed on these continents, there could have been no land plants nor animals on them, and as Agassiz truly says, marine cryptogams were the highest plants, and fishes were the highest animals. But he overlooked the fact, that, what were then terrestrial animals and plants existed on other continents, which are now ocean beds. He is right however in his description of the Carboniferous age. The coal beds were formed on these continents when they were covered with water, and when only marine plants and animals existed on them. That was his Carboniferous age. But, that was the antediluvian age.

All geologists seem to have had similar ideas of that Carboniferous age, when the coal beds were

formed. Even Prof. Proctor in his peculiarly inflated style, says:

"There was a time, when the atmosphere of our earth was laden with enormous clouds; and when underneath those clouds those operations of abundant vegetation took place," which formed the coal—"when strange animals existed, such as geology gives us the record of—the enormous Saurian with long neck stretched above those oceans."

This is what he says, as to the state of this earth, when the coal was formed. And it corresponds with what Agassiz said; and it shows that the Carboniferous age, and the antediluvian age are the same. I have now made out my proposition, viz.: that the Carboniferous age was the antediluvian age.

I do not hesitate now to affirm, that there is no proof—never was—and never can be any proof, that terrestrial vegetation—or trees and plants growing on land ever entered into the composition of coal. And whenever a scientist shall affirm the contrary, set it down, that he is only affirming his own hypothesis, or opinion.

The proposition which I affirm is this, viz.: That

The coal beds from which we obtain our supplies of coal, were formed in the antediluvian seas, out of vegetable matter which grew in the water, and not on the dry land—and this was the Carboniferous age, of which there is so much said in the writings of all geologists.

It seems one of the greatest marvels, that a fact of which the proofs are so abundant, should never have been brought to the attention of these earnest ex-

plorers of the secrets of nature. When they know that the coal beds were formed in the sea, and also, that there is as great an amount of vegetable matter in the sea, as on the dry land, and yet affirm that the vegetable matter in the composition of coal, must have grown on the land and not in the water, is something that quite surpasses my comprehension.

The composition of coal, as shown by chemical analysis, ought to have assisted them in the solution of this problem, over which they have labored so long, and to so little purpose—ninety parts carbon, six parts water, and only four parts vegetable matter—did they not know that here was a combination of parts, that could never take place on the dry land, and under the bright and glorious shining of our natural sun?

When oxygen gains the ascendency, carbon goes into obscurity. We know that it has a tendency to settle down, from specific gravity or some other cause, to the lowest places, as dark caverns, pits, deep wells, and deep ocean beds. It seems to shun the open day and the clear sunshine. It is known that animal life is sometimes destroyed in very low and dank places, by the amount of carbon that has settled down there. Hence, it is always prudent to let down a candle, before descending into a deep well.

Now it is certain that plants cannot grow without carbon. Of course, the more carbon, the more luxuriant and thrifty the plants. Every one has probably noticed the way that potatoes sometimes sprout, and grow, in a low, dark cellar. The sprouts shoot up, often, several feet, in a comparatively short time, though there is neither earth, nor rain, nor sunlight,

to make them grow. And the shoots are perfectly white, or colorless. Now, do you know what that white shoot or sprout, that has shot up out of the potato, nearly three or four feet in length, is composed of? Well, it is carbon—more than nine-tenths of that stalk is pure carbon.

This may give some idea of the vegetation that thrives in the sea. The plants that grow far down in the water, are like that potato sprout, colorless, except the tops which get above the water and turn green; and they are composed almost exclusively of pure carbon. And this explains why coal beds were formed in the sea, from vegetable matter that grew in the sea. And this will enable us to understand those passages before quoted from Agassiz, and Proctor, and many similar passages, which might be quoted from other authors, to prove that the antediluvian age was the Carboniferous age.

I do not undertake to explain how coal was formed in the antediluvian age. That is not my province. But we can know what coal is made of. Chemistry teaches that. And when we know, that is a combination of elements that cannot come together on the land, but only in the seas, it is competent for me or any one to say that the coal beds must have been formed, not on the lands, but in the seas. And I have no doubt they were formed by chemical action, in obedience to the law of affinity, according to which, all the compound substances in the world, have been formed. Now, I will give several reasons for this view, which all will understand.

I. In the first place, it seems to be in exact harmony

with what is known to be the general plan of the universe. What is the system of nature, but a grand chemical laboratory, into which the first elements of all things are put, and though never a particle is lost, all come out different from what they were when put in, under thousands and millions of new combinations. It is God's mill forever grinding.

You take the substance of an apple, a peach, a potato, a piece of bread, or a bit of meat into your stomach; and there, in consequence of certain affinities, after passing through a process, some of the particles go into the blood, some into flesh, some into bone, etc. You don't understand it, but you know it must be so. Millions of these changes are going on all the time. The law is absolutely perfect, and regular in its operation. Nothing new comes into existence, and nothing old goes out of existence. But in the wonderful laboratory of nature, which is God's great factory, these mysterious gases—carbon, hydrogen, oxygen and nitrogen, are forever combining with one another, and with other simple elements, and forming thousands and millions of other bodies and forms, that seem like new substances, but which are not new, only in appearance—thousands and millions of them—some very curious, and some beautiful.

The coal is one of the simplest of these formations. The process by which it is formed, may be similar to that by which the pearl shell we so much admire, is formed, which incloses and protects some tender and delicate sea-mite, which God endowed with the principle of life. That beautiful, polished, pearly substance is formed very much like the coal, by a combi-

nation of the particles of one element with those of another element, effected by this law of affinity.

II. A second reason for this view is, that examination shows that other crystal rocks, found in what are called the Silurian formations, are exactly similar as to the nature of their formation, to the coal formation. They were crystallized or changed into their present state, by a process of chemical action, combining certain particles of one simple element with others, under certain conditions. It may be that the crystals are too minute in the coal, as in many other substances, to be detected even with the microscope, while we do discover them in the marble rock. But this is not a valid reason for denying the general principle of formation. We know that in the crystallized marble limestone, the original elements are calcium, carbon, and oxygen, which being combined with lime, form the crystal limestone. The conditions are different—the elements are different, by which coal and limestone are formed; but the principle of affinity, and the chemical action are similar, or the same in all cases. There is one law, for God is one and the same. The law applies to the formation of every substance known to us, for we know nothing in the abstract, only in the concrete. Even the fine down that appears on the flesh of a babe; or the substance that covers the tops of our finger extremities, which we call finger-nails, was formed by the law of affinity—certain atoms having an affinity for certain other atoms, and combining with them, under certain conditions.

III. Thirdly, though the shell limestone formations in the earth's surface, are not like the coal, or the

crystal limestone in their formation, yet, this is not an argument against the doctrine of affinity, but rather establishes it. We know how the shell limestone rocks were formed by the accumulation of oyster shells, or other crustaceans, piled up gradually, year after year, and decaying, and then becoming cemented together; and finally, after the upheaval, hardening into rock. But, after all, this is no exception to the general law. The shells which form the pile—each and every individual shell, was the external covering of a sea animal, and was formed in the great laboratory of nature, on the principle of chemical affinity. There is not a substance known to us, belonging to the animal, vegetable, or mineral kingdom, that was not crystallized into being, by the same law.

Now, if this is the universal law, why should we not believe that coal is formed in the same way, when the elements of which it is composed are brought together in their exact proportions, and when the temperature and other conditions are favorable? How could we believe anything else, than that coal would be formed in such a contingency, or under such conditions? But I submit that these conditions can never be obtained on the solid land. And I repeat, that there is no process known, by which terrestrial wood can be converted into coal.

Now let us just look at the opinions of some of these geologists, as to the manner in which coal beds are formed, to see how they contravene the facts of geology.

So respectable an author as Prof. Dana, in his work, maintains the opinion that coal beds have been formed

from beds of peat, in marshy, boggy districts—that the black alluvium, the decayed vegetation and other decayed substances, mixed together, and pulverized and settling down, in the course of ages are converted into coal. Is that a scientific opinion? Can any one believe, that in such a compound, there would be ninety parts pure carbon, six parts water and four parts vegetable matter? Would not the larger portion be only alluvium or soil? And could that be changed into coal by any lapse of ages?

And Sir Charles Lyell, a very good authority, gave his opinion that coal beds have resulted from the accumulation of immense drifts of pine trees, and other timber which have been carried down rivers, and lodged on the banks or at the mouth—that these have been buried or submerged beneath beds of earth and sand, and in the course of vast ages changed into coal. Is that a scientific opinion? Is it in accordance with the facts of geology? I will give a passage from Sir Charles, as I want you to understand exactly what they believe. These are his words:

"In the Northern hemisphere at present, we see the materials for future beds of lignite and coal are being massed in high latitudes, far from the districts where the forests grew, and on shores where scarcely a stinted shrub can now exist. The McKenzie and other rivers of North America, carry pines with their roots attached, for many hundred miles towards the north into the Arctic seas, where they are imbedded in deltas, and some of them drifted farther by currents towards the pole."

These heaps of drifted logs are the material for

future coal beds—that is the opinion of an eminent geologist. As I said, the name of Sir Charles Lyell as a scientist, is high authority. But I will briefly state three reasons why, in this case, we cannot accept his opinion.

1. In the first place, there is not carbon enough in the forests that now grow, to change them into coal.

2. Secondly, if coal beds were formed out of vast piles of driftwood, mud, sand, and other material, they could not present that appearance of uniform regularity always found in the coal measures, where the coal is in regular layers or strata, with alternating layers of limestone, or shale, or slate, between them. For example, sometimes, you will have a stratum of coal only three inches, or it may be a foot, or two feet thick, extending for a great distance, laid in between two other layers of some other substance. Now how is it possible to believe that layers of coal deposited in such perfect order, one above another, could have been formed from the masses of drift that are heaped up without any order, in deltas at the mouths of rivers? The opinion is contrary to fact and to common sense.

3. There is a general concurrence of opinion among geologists, that the forests of the coal formation were different from any that grow on our present lands. In addition to quotations already given on this point, I will quote what Huxley said in his Nashville lecture in 1876. Speaking of the forests from which the coal beds in Tennessee were formed, he said:

"It is quite easy to see that these forests were not trees like our present trees." That is a very sound opinion, if they grew in the water as other geologists

admit. But in the same lecture, Huxley said: "Plants, forests and trees did not grow in the sea, and shell and star fish no more grew upon the land than they now do." Here, Huxley contradicts himself, and all other geologists. For they teach, without exception, that, the first plants and trees that ever did grow, grew in the seas. Hugh Miller, for example, speaks of "forests of algæ, over which antiquely formed fishes swam ages ago." These are Miller's words.

We see, then, how confused are the ideas of geologists, with regard to the formation of coal—how they contradict one another, and contradict themselves.

THE CHALK LINE.

I shall now construct an argument from what geologists call the chalk line, which has the appearance of a demonstration, to prove that the Carboniferous age was, in fact, the antediluvian age. The chalk line belongs to the cretaceous age, which geologists say was the latest geological period, which preceded the present age of man, and which must, therefore, correspond to the antediluvian age. And they say, this chalk line is the only line or stratum which is uniform, or to be traced in all parts of the globe. There are breaks in it, of course, here and there, but it always reappears, and is to be traced on the continents of Europe, Asia and America, like a concentric ring, separating the strata of rocks above, from those below it.

But now, what is that chalk line? It presents a whitish or grayish appearance, and is indeed a mixture of everything that can be supposed to have settled on

the bottom of the sea, during the two thousand years when these continents were covered with the ocean. Prof. Maury says, that the bed of the ocean is soft, and that there are always settling down upon it from the waters above, like snowflakes, thousands of the debris of insects of every kind. This is the material which, decaying and hardening, has formed, after two thousand years, what is called the chalk mixture. A thorough chemical analysis proves it. Huxley says:

"That chalk, for example, which forms a great part of the cretaceous formation in some parts of the world —that chalk is identical in its physical and chemical characters, or practically so, with a substance which is now being formed at the bottom of the Atlantic ocean," etc.

That chalk marked the bed of the antediluvian seas. It would be found everywhere in the crust of the earth, if there had been no causes in operation at the bottom of the antediluvian seas, causing interruptions or breaks in that chalk line. There are numerous such breaks or interruptions, but the line always reappears after an interval.

This, I say, is a demonstration, that the seas covered these present continents at the latest geological period, at a date just previous to the present age of man on the globe.

But what was the cause, operating on the sea bottoms, during the antediluvian age, which occasioned these numerous breaks now observed in this chalk line? The true answer to this question will show, that the speculations and theories of geologists are

overthrown. This is the answer, and I think that every one will understand it. In one place colonies of oysters would be at work, piling up their shells through successive centuries, and these would, in the course of time, constitute beds of limestone. Of course, this would cause a break, and the chalk mixture would disappear in that place. In another place, there would be, perhaps, a forest of marine vegetation of some kind, and this in certain conditions of the water, would be changed by chemical affinity into a substance from which a coal bed is formed. This process might be repeated the next year, or the next century, again and again, till a number of strata have been laid down in the same place. But, of course, there would be no chalk-line in that place. In another place, the ocean currents would heap up mountains of sand—pulverized quartz, or some other kind, and that might be the material for the formation of a system of sandstone rock. And there would be a break. But all these operations in the sea, would be going on at the same time, and not at different and distant epochs, with intervals of millions of years between them.

What then is the real state of the case? And how should we expect to find the chalk formation relatively to the positions of the several other formations? If there had been no submarine agencies at work in the antediluvian seas, when the present continents were covered with water, the appearance of the chalk formation would have been uniform and unbroken. The breaks or the interruptions in this uniform appearance, were caused by the formation of the coal measures in

one district; of the Silurian rocks in another; the piling up of a bed of sea shells in another; the accumulation of a mass of rock salt in another, etc. But all these operations were going on contemporaneously.

If there were a single spot on this globe, where they could find this chalk-line perfectly developed, and then perpendicularly below that, a system of coal formations, and then perpendicularly in a line below the coal measures, the system of Silurian rocks—if they could find all these, one above another, in the same region, on any single spot of the earth's surface, they would have, at least, a plausible foundation for their theory. But they have never found one such spot on the surface of this globe. What are the facts? Hear what Prof. Dana says on this point:

"It must not be inferred," he says, "that the earth is covered by a regular series of coats, the same in all countries; for this is far from the truth. Many strata occur in New York that are not found in Ohio, and the States west; and each stratum varies greatly in different regions, sometimes being limestone in one region, and sandstone in another." Again he says:

"The strata of rocks are the records in determining the past condition of the earth's surface. And yet, that the records make an intelligible impression, it is necessary that all the parts or strata be arranged in their proper order, that is, the order of time." And he adds:

"Many difficulties are encountered in determining this order. 1. Because the strata of the same period differ even on the same continent; for example, while sandstone and shale are forming in one place, limestone is forming in another place. 2. When rocks

are forming in one region, there have been none forming in another. Hence, this record of the ages is nowhere perfect. In one country one part will be very complete, in another country another part,—and all have their long breaks—that is, large parts of the series entirely wanting. In northern New York, there is only the earliest rock—that made before the first fossiliferous beds were laid down. In the Western States, there is only a part of the lower half of the series of strata—in New Jersey, only part of the lower half, and part of the upper half with wide breaks between them."

So then the records are nowhere perfect, for the reason he mentions, that they never find all the strata successive—that is, they have never found the Silurian rocks, in the lowest strata, and then above them the coal formation, and then over that, the chalk mixture. This is the order they require them to be in, to record the vast ages; but they never find them in this order.

I will offer one more argument to prove that our coal beds were formed in the antediluvian seas, and from vegetable matter that grew in the seas—and that argument is founded on the fact that no fossils of land animals or plants have been found in the carboniferous stratifications. But if the vegetable matter had grown on the land, there would be ample proof of it in the coal beds. All the fossils found are of a marine nature, as fishes, marine plants, and all sorts of shell fish. If the trees and plants all grew on the dry land, it is strange that not a fossil leaf or plant or tree is found to show that they were of terrestrial growth. Yet they find a plenty of fossil fishes and sea plants in the carboniferous strata. As to the entire absence

of land fossils from the coal measures, I will quote a passage from Prof. Ansted's work. He was of King's College, London. He says:

"The whole series of rocks, we have hitherto considered, from those of the earliest palæozoic period, to the upper beds of the oolites, bear such evident marks of marine origin, both in their mineral composition and fossil contents, that no reasonable doubt can be entertained on the subject; and this is the case even with the great mass of the carboniferous strata, almost the only beds which imply any neighboring lands—but which never yet offered for investigation, the remains of land animals."

He says, "*never*." In the Philadelphia *Press*, several years ago, I saw a short article, very similar, as to its import. It reads thus:

"The Chief Engineer of the Philadelphia and Reading Railroad Company, William Lorenz, Esq., is the possessor of a fine specimen of saurian footprints on coal slates, recently found on the mountains in the Schuylkill coal region, near Shenandoah City. This, say learned geologists, proves the existence of air breathing animals in the fern forests, which form the present veins of anthracite. This is the only discovery of the kind, indicating animal life, ever found, except a few shells, within the four hundred square miles, forming the coal region of this State. The saurian is a species of reptile, with four eyes, and scales such as alligators," etc.

If learned geologists can claim this saurian or alligator of the deep, as a land animal, and if this is the only discovery of the kind ever made in a district of four hundred square miles in extent, I certainly will

not attempt to deprive them of the small satisfaction, which they may fancy, this discovery affords them.

Now, I will close, after stating the points which I have made in this chapter.

1. I have insisted on the proposition, that there was a Carboniferous age in the past, but that it was the antediluvian age.

2. As preliminary to this proposition, I stated that coal, according to the chemical analysis thereof, contains ninety parts of pure carbon, six parts water, and four parts vegetable matter—a combination of elements that is never found on the dry land.

3. That there is a system of vegetable life, peculiar to the sea, as abundant, or even more so, according to the admissions of geologists, than terrestrial vegetation.

4. That, as the sea produces vegetable matter in the greatest abundance, and that, as the coal beds were formed in the seas, the necessary logical conclusion is, that the coal was formed from marine, not terrestrial vegetation.

5. That there is no art or process known to man, by which terrestrial wood can be turned into coal.

6. I showed the absurdity of the theory suggested by Miller, of successive subsidences and emergences.

7. I explained that coal must be a crystal formation, like other crystallized rocks, produced by chemical affinity, a law that governs all the sixty-three original elements, under certain preordained conditions.

8. I showed that the chalk line is in itself, a demonstration, that it was formed in the water—God's perpetual dividing line between the antediluvian and the

modern or postdiluvian worlds—and that the breaks in that line, show that the formations of coal, limestone and other rocks, which caused those breaks, took place in the seas at the same time when that chalk line was formed.

9. I insisted, with Prof. Dana, that the rock strata, which, they say, are the records of the world, ought to be found in their proper order, in succession, in order to spell out, plainly and distinctly, the vast geological ages; but they have never been so found, and they never will be.

10. I showed that neither fossil land animals nor plants have ever been found in coal beds; which could not be true, if the vegetation had grown upon the land. And, I showed that, an abundance of marine fossils are found in them, which is conclusive that the vegetable matter grew in the water, where the coal beds are formed.

And thus, by the logic of stern facts, are we forced to the conclusion that the *Carboniferous age*, which has been the theme of the songs and the poetry of these authors for the last quarter century, was the *antediluvian age;* and that the luxuriant and wonderful vegetation which lent inspiration to their songs and their poetry, grew in the antediluvian seas. The facts of geology can lead to no other conclusion but this. Nothing is wanting but the facts of geology to overthrow all the speculations of geologists.

Is geology, therefore, not a science? If the Latin word *scio* means, "*I know*," and if science is absolute knowledge, how can we dignify with the name *science*, that which is mere conjecture? And what is geology,

as to its conclusions and inferences but a system of conjectures, from beginning to end? A shrewd writer says:

"The geologist is a man of science, up to the development of a certain form in a rock, but he becomes a theorist, the moment he goes beyond that form, and assigns for it the circumstances under which it was made, and which he is unable to prove. The step is so short in this instance, from truth to fiction, that very many in the heat of excitement, have taken one for the other, without knowing the difference, and some, apparently, without wishing to be informed of the difference."

Here, I will take occasion to say, that I do not believe the Baconian philosophy has played out, or that the inductive method has become obsolete. We are living in an age of fiction, and the world is filled with books, made up of fine-spun theories, long-drawn out. But I do not think this state of things can last much longer. A reaction will come. A surfeit generally follows a night of debauch.

Now the rage is all for fiction. The press is pouring forth floods of light literature—pictorial monthlies—pictorial weeklies, all filled with light literature—light, indeed, because destitute of thought, and because they can be read without the labor of thought—light literature—fiction—romance—love stories—fit food for sickly imaginations, which, instead of arousing thought, creates a distaste for wholesome intellectual food, and thus demoralizes individuals as well as nations.

And the men of science think they must adapt themselves to this vitiated taste, and so they ignore

the philosophy of Bacon, and befuddle their brains by efforts to build up systems of science, the warp and woof of which is fiction.

Let us stand for the truth in religion—in science—everywhere, and always. For, as Milton said, "Though all the winds of doctrine were let loose upon the earth, so truth be in the field, we do injuriously to misdoubt her strength. Let her and falsehood grapple. Who ever knew truth put to the worse in a free and open encounter? For who knows not truth is the strongest, next to the Almighty?"

CHAPTER VIII.

The Garden of Eden, and the Antediluvian World, Viewed from the Standpoint of Science.

The cradle of mankind—Extract from Martindale's Bible Dictionary—The description in Genesis—No such locality existing now—What a missionary in Asia says—The flood changed the earth's surface—A scientific argument suggested by Prof. Maury—Where the ark must have been built—When the mountain ranges were upheaved—Extracts from Beaumont and Agassiz—Where Noah must have lived—Climatic conditions of the former continents—Origin of our mountains—The geological proofs—Four inferences—No volcanoes on the ancient earth—No rain storms with thunder and lightnings—How the primitive earth was fertilized—The first rainbow—No marshes, nor deadly malaria causing epidemics—Wonderful fertility of the primitive earth—Origin of our great rivers—How the Mississippi was formed—Longevity of the antediluvians—Three causes assigned—Fruits of rainless countries—Animal food—Fearful mortality in this present age.

WHAT would not antiquarians and travellers give, could they but find that spot, so famed in the world's history—the cradle of mankind, the lovely Eden, where the progenitors of the race talked face to face with God, and ate angels' food? That fairest spot the earth has ever seen, has never been identified, and, of course, it never will be.

In his Bible Dictionary, Martindale says:

"Some have thought, it never had any existence, and that whatever is related concerning it in the Bible, must be understood allegorically. Others believe it was out of the confines of this world. Others have pretended that it was only in the beginning or before

the creation of other material beings. It has been placed in the third heavens, in the orb of the moon, in the middle region of the air above the earth, under the earth in a distant place concealed from the knowledge of men; in the place now possessed by the Caspian sea; under the Arctic pole, and in the utmost southern regions. There is hardly any part of the world in which it has not been sought for—in Asia, in Africa, in Europe, in America, in Tartary, upon the banks of the Ganges; in the Indies, in China, in the island of Ceylon, in Armenia, under the Equator, in Mesopotamia, in Syria, in Babylon, in Arabia, in Palestine, in Ethiopia, where the mountains of the moon are near the mountains of Libanus, Anti-Libanus and Damascus."

But what is the reason that none have ever been able to locate or to identify the lovely garden? The spot is clearly described and defined in the IInd. chapter of Genesis, and if what palæontologists tell us be true, there ought to be no difficulty in identifying the locality of Eden. This is the description in Genesis:

"And the Lord God planted a garden eastward in Eden; and there He put the man whom He had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil. And a river went out of Eden to water the garden; and from thence it was parted, and became into four heads; the name of the first is Pison; that is it which compasseth the whole land of Havilah, where there is gold; and the gold of that land is good; there is Bdellium and the onyx stone. And the name of the second river is Gihon; the same is it that compasseth the whole land of Ethiopia. And the name of the

third river is Hiddekel; that is it which goeth toward the east of Assyria. And the fourth river is Euphrates."

This inspired description is the only account to be found in any language, concerning the primitive Eden. And the account has served, in a singular manner, to mislead orientalists and Biblical scholars, as to the birthplace of mankind. From the identity of several of the names of the rivers mentioned in the description, with those now existing in Asia, persistent efforts have been made to locate the primitive Eden in Armenia, near the spot where the rivers Gihon and Euphrates are supposed to take their rise. But these efforts have proved, hitherto, utterly vain. There is no locality that now answers to the description in Genesis. Dr. Asahel Grant, a missionary, who spent several years in the East, in Armenia and Persia, wrote:

"The Orientals are agreed that this river (the Tigris) and the Euphrates are two of the rivers which watered the garden of Eden; and the original name Hiddekel or Degleh is preserved by the Christians and Jews; but the other two rivers they are unable to identify; and their notions of the situation of that primitive cradle of our race, are altogether confused and visionary."

And such notions can be nothing else but visionary and confused. The obstacles in the way of identifying that cradle of mankind, are of such a nature as to render it forever impossible to locate the spot, anywhere in the region of Armenia.

I. One of these difficulties is found in the fact, that,

the surface of the earth has been geographically changed. The account in Genesis affords confirmatory evidence of this. One of the rivers—Gihon—which went out of the garden, it is said, encompassed the whole land of Ethiopia, which we know to be a physical and geographical impossibility, as the lands now lie; since the river is on one continent, and Ethiopia is on another. This fact alone must settle the question.

What then? Is the Scripture wrong? Or must we conclude that there was another river, named Gihon, on the antediluvian earth, and another country that was called Ethiopia on the former earth, different from the river and the country, called by those names on the present earth? If, according to a proposition so clearly proved in a previous chapter, sea and land changed places at the date of the Noachic deluge, we can see the reason, why the locality of Eden has never been identified, and why the four rivers cannot be found.

But now, if it is asked, how there came to be a country in the interior of Africa, of the same name with that which must have existed on the antediluvian earth, there is no difficulty about that. It may be answered by another question—Why is it that there exists on this continent, a city—yea, several cities called London, after the name of a city which existed in the old world for many centuries before this continent was discovered? It has been common in all countries and in all ages, to transfer or hand down names of persons, and cities, and countries, in memory of others that formerly existed. Ham was one of the persons saved in the

ark. And he had lived for many years on the former earth, and it would be only natural for some of his sons who settled in Africa, to call a portion of that country Ethiopia, after the name of that Ethiopia, about which they must often have heard their father speak, which had existed on the former earth. In like manner, the two rivers—Gihon and Euphrates—must have been named by the sons of Shem, who settled in Asia, after rivers that existed on the antediluvian earth.

If the flood had made no change in the earth's surface—if, as some writers imagine, there had been no displacing of the soil and of the vegetable tribes—if the waters rose gently and gradually, and retired as gradually after a short time—if this had been the case, there would have been no visible change in the surface of the earth. The four rivers as described by Moses, going out of Eden, would have been there still, flowing on in their channels, as they had ever done. And Eden would have been there without any such change as to render its future identity forever impossible. Havilah, that land of gold and precious stones, would have remained unchanged in any of its material features. The whole land of Ethiopia would have been compassed still by the river Gihon. Then Noah and those who came out of the ark with him, would have had no difficulty in identifying those ancient lands, and the rivers, and the sacred soil where Eden once flourished.

The very fact that none of the descendants of Noah, were ever able to identify any of those ancient places, is conclusive evidence that they had all been wiped

out. For, it is certain, that if Noah and his sons had been able, immediately after the flood, to identify those ancient places and rivers, which they had known so well before the flood, their children would have learned something of the history of them, and their children's children, and it is hardly possible that all traces of their existence, would have been wholly and forever lost to the world. History can show nothing of the kind. The sacred river Jordan pursues its course, and waters the holy land, flowing through it in the same channel, which confined its current more than three thousand years ago. And we can still identify the river of Egypt—the Nile—the source of its riches, though well-authenticated history shows that it has been flowing on, in the same channel, for a period of four thousand years. But the four rivers that went out of the garden, and the garden itself, have never been identified, and they never will be, as they must have been wiped out of existence, by the catastrophe of the flood.

II. There is a second difficulty in the way of locating the garden of Eden in Armenia, Asia—a difficulty that is presented by natural science itself. There have been estimates made by such distinguished scientists as Prof. Maury, showing that the ark prepared by Noah, must have been borne by the winds and the ocean currents, a distance of more than 5,000 miles in a direction a little north of west, before it landed. Of course, it must have started on its voyage, from a point in the Pacific Ocean, more than a thousand miles east of Canton in China, in order to have made its landing, in one hundred and fifty days, on Mount Ararat. We

know that the trade winds blow regularly from east to west, and that there are constant ocean currents in nearly the same direction. A close calculation, therefore, can be made as to the course, and the distance the ark sailed, while it was afloat on that universal sea. Now if we can trust an exact scientific calculation like this—and there is no fiction, nor speculation about it, then we are forced to the conclusion, that Noah built his ark a thousand miles east of China, in a region now covered by the waters of the Pacific. If Eden-land was anywhere in that region, it must have been submerged when the whole antediluvian world was sunk, and the search for it must ever be in vain.

This calculation is confirmed by geological science. The most reliable geologists, such as Beaumont, Agassiz, and others, tell us, that, at the epoch of the flood, there was a cataclysm, or a sudden and terrible convulsion of the earth, when our great ranges of mountains were formed or upheaved, which formerly had no existence. Beaumont, a French geologist, says:

"Some mountain chains are comparatively modern, such as the Alps, which were partly upheaved, after the middle tertiary period. The elevation of the Andes was more recent, and was accompanied by the simultaneous outburst, for the first time, of 270 of the principal volcanoes now active.

"The agitation of the waters of the ocean caused by this convulsion, probably occasioned that transient and general deluge, which is noticed in the traditions of so many nations."

To the same effect, Agassiz says:

"It has been the work of the nineteenth century, to

decipher the history of the mountains; to show that there was a time when they did not exist; to decide, at least, comparatively, upon their age, and to detect the forces which have produced them."

Again, Agassiz said:

"Next to Von Buch, no man has done more for geology than Beaumont, the French geologist. Perhaps, the most important of his generalizations is that, by which he has given us the clue to the limitation of the different epochs in past time, by connecting them with the great revolutions in the world's history. He has shown us that the great changes in the aspect of the globe, as well as in its successive sets of animals, coincide with the mountain upheavals."

Do we understand this? The aspect of the globe was changed, and its sets of animals, at the time when the mountains were upheaved from ocean depths. And Beaumont says, that the convulsion was so great and so general, as to cause that general deluge, noticed in the traditions of so many nations. This is exactly corroborative of the words of Moses.

If now, it is an established fact of geological science, that the sea and land have changed places, and that the mountains were brought into existence at the same time, let us consider some of the necessary and important conclusions, to be drawn from this great geological fact.

I. The first is, that it is folly to look for Eden—the cradle-spot of mankind—on any of our present continents. We should have to go, at least, a thousand miles beyond the most eastern limits of China, and there, far down beneath the waves of the Pacific, per-

haps, would be all that will ever be discovered of that once beautiful Paradise.

II. Another conclusion has respect to the climatic condition of the antediluvian earth—it was truly paradisaical, as compared with that of the present habitable earth. The severity of winter and the excessive heats of summer, were unknown to the inhabitants of the former earth. Spring and autumn were the only seasons they could have known; and all the year round, vernal fruits and flowers must have bloomed and flourished; as we know to be the case even now, on some of the sea-girt isles in the tropical regions. The ocean absorbs the sun's rays, and the waters preserve an equilibrium of temperature, as the land does not, and the breezes coming over the seas, cool the land in summer, and warm it in the winter season.

Supposing now, that what is at present our Atlantic Ocean, was formerly a continent, extending from the southern point of Africa in the south, to Labrador in the north, with great oceans on both sides, seeing that then America, and Africa, and Europe, and Asia, were oceans instead of continents, so that as a vast island or a peninsula, it had sea breezes from every side—as far as the climatic conditions are concerned, it would be impossible to imagine how an island or a continent, could be more favorably laid out or located, if it had been expressly designed as the abode of a happy and sinless race. There must have been a perpetual spring. If Bishop Heber could truthfully say:

> "What though the spicy breezes
> Blow soft o'er Ceylon's isle;
> Though every prospect pleases,
> And only man is vile;"

as descriptive of those island regions, where smiles one perennial spring, how much more may we suppose, that this great Atlantic region, when a continent or an island, must have been a wide and extended Elysian field. We can easily believe that the ancient Greek philosophers and poets, may have had some foundation for their beautiful myth, which says, that:

"Long ago, there was a lovely island that floated far off into the Atlantic, and became lost. The fruits of all climes grew in the gardens, and fountains of health flowed in the valleys. The happy island was ruled over by ten kings who were brothers, and the people were all as one happy family. Many mariners wandered upon the stormy deep, seeking that island of the blest, but none ever came back to say, they had succeeded in the search."

If the Atlantic region had been expressly designed as a terrestrial Paradise, we could not conceive how the lands and the water could have been more favorably adjusted for the purpose. Farther north than Scotland—perhaps, as far as Norway, plants and animals, now natives only of the tropical regions, lived and flourished where they are not now found, and where it would not be possible for them to live and flourish. On the testimony of geologists, we know that elephants must have been natives of the forests that grew in the Atlantic region; and that these animals existed in great numbers to the north of England, is evident from the fact that 2,000 elephants' grinders were fished up from a single spot in the bed of the Atlantic Ocean. This proves that the mild climate of India, where elephants most abound, must

have prevailed in the latitude of England and Scotland.

What has now been remarked with respect to the superior climatic condition of the Atlantic region, would be equally appropriate, if said, concerning the Pacific, and the Indian Oceans, when they were lands, situated in the tropical regions, fanned perpetually by sea breezes from the Northern and Southern hemispheres.

III. Another point that deserves our special attention, in the contrast between the antediluvian world and our present habitable earth, relates to our existing mountains. We have already seen what geologists teach, as to the origin of these mountains. This teaching is summed up in a single paragraph, from Agassiz, thus:

"All mountains and mountain ranges, have been upheaved by great convulsions of the globe, which rent asunder the surface of the earth, destroyed the animals and plants living upon it at the time, and were then succeeded by long intervals of repose—and a time of building up and renewing followed the time of destruction."

The geological proofs which show the upheaval of the vast chains of mountains, simultaneously with the elevation of the ocean beds, are so cumulative, that no respectable geologist would, to-day, be disposed to deny the fact. And this fact lays the foundation for these four necessary and logical conclusions, viz.:

1. That the old world, being destitute of mountains, must also have been free from volcanoes.

2. That there could have been no tornadoes, no thunder, nor lightnings, nor rainstorms.

3. That there could have been no swamps nor marshes, nor the deadly malaria arising from them, that cause epidemics.

4. That the land, being almost on a level with the sea, and free from sand hills and rocks, must have been perpetually covered with the most luxuriant vegetation, which fact has, probably, given rise to the modern myth of "*a Carboniferous age.*"

These are important points of difference, between the present and the former earths. Let us contemplate them with a little more attention.

1. And first, that the old world, being free from mountains, must also have been free from volcanoes. M. Elie Beaumont said, that the volcanoes went into action when the mountain ranges were upheaved. There is no hypothesis more natural or probable than this. We know that there are vast beds of sulphur and nitre, deposited in different places in the bowels of the earth, whether deposited there at the creation, or at some subsequent period, it matters not. And we know, furthermore, that the constituent elements of granite, as quartz, feldspar and mica, contain the electric matter, which must have flashed up in vivid streams of fire, when the convulsive rending of those mighty masses of flinty rock occurred, igniting those hidden combustible materials, by the instant rushing in of the air and the water, for the first time; thus kindling those subterranean fires which still burn, and which must burn till the fuel which feeds them shall be consumed. That fuel is not inexhaustible. More than

half the volcanoes on the globe have burned out centuries ago, and that is evidence, that all the rest will burn out in the course of time.

2. A second inference, as I stated, from the non-existence of mountains on the surface of the antediluvian earth, is, that it must have been free from rainstorms, and thunder and lightnings, as we are acquainted with these phenomena on our earth. Of course, nature has not changed. But the conditions of nature being changed, the action of nature's laws has to conform to the changed conditions.

What produces a rainstorm, a hurricane, or the phenomenon of thunder and lightning? There are no rains in Egypt—what is the reason? Naturalists will tell you, it is because there are no high hills—no alternating mountains and valleys surrounding that country—only level plains of sand, and an unbroken, smooth surface of land and water.

The fertility of Egypt is derived from the floods that come down the Nile, from the interior portions of Africa, which is a mountainous region. In that mountainous region, there are great rainfalls, at a certain season, and these cause the swelling of the Nile. And hence the fertility of Egypt.

Now, the present continents of the earth are all like Ethiopia. Europe, Asia and America all have their ranges of mountains, and all abound with numerous hills and valleys. Consequently, the storms, the rains, are abundant. Thus the rivers are made—the valleys are watered and fertilized—and thus are produced the phenomena of thunder and lightnings, known to all countries that have a broken or moun-

tainous surface. But they did not exist on the antediluvian earth.

How then was the antediluvian earth watered? And what was the cause of that amazing fertility which must have existed, and which has probably suggested the idea of the Carboniferous age? Moses tells us the cause of that fertility, saying:

"For the Lord God had not caused it to rain upon the earth, and there was not a man to till the ground. But there went up a mist from the earth, and watered the whole face of the ground."

This is the whole solution, suggested by Revelation, and by a knowledge of the laws of nature. The laws of nature must have been uniform in their action. There could have been no sudden and violent commotions of the natural elements, as the causes of such commotions did not exist. By day the heat of the sun would cause the vapors to ascend from sea and land; and the coolness of the night shades, would cause these vapors to condense again in the form of mist; and thus the vegetation would be furnished with the moisture necessary for its growth, with uniform regularity, and by an unvarying law. There could have been no drouths to burn up the crops, nor excessive rains to drown them.

The rain of forty days and forty nights was, doubtless, the first rain ever seen by the old antediluvians, and, of course, no rainbow had ever been visible till after the flood, when God enacted a special covenant with His servant Noah. Those who came out of the ark, had witnessed that awful storm in which the

former earth had perished, with every creature in it, and they had seen no rainbow promise of hope. When the configuration of the earth's surface was so changed, that storms and rains would be a natural phenomenon, God promised His servant that, in future, when they should see threatening clouds and storms, they should not be alarmed, for that He would never again destroy the earth with a flood.

As a pledge and token for the faithful performance of that covenant, He said that He would put His bow in the clouds. Noah and his family, after they came forth from the ark, were the first who ever witnessed that sublime and beautiful phenomenon.

3. A third inference from the non-existence of mountains on the former earth, has respect to its absolute freedom from everything like swamps and marshes, that generate those awful epidemics, and plagues, which have so fearfully scourged the guilty inhabitants of the present earth. They were unknown to the antediluvian earth. This is so obvious that it is not necessary to enlarge upon it.

4. Another, and the last inference from the recent elevation of mountains on the earth's surface, and the absence of this feature in the former earth, is, that the whole surface of that former earth, must have been covered with a wonderful vegetation—a vegetation that was spontaneous and universal. No rains—no severe toil was necessary to promote the growth of that vegetation. As the land must have been but a little above the level of the sea, and as the dews, by an unvarying law, must have refreshed and cheered the ripening fruits, and plants, and flowers, every

night, there was little culture needed to make them grow, and no possibility of being cut off or even of being retarded in their growth, by a drouth. The labor of the husbandman, in that age, must have been light, as compared with the toil requisite to secure rich harvests now. For then, the dry land was a pure virgin soil, originally adapted to vegetation by the Creator; whereas, all our present soils are mixed with gravel, and sand, and limestones, and other substances, mixed together, that originally came out of the sea, which require time to change them into a loam or soil capable of producing an abundant vegetation. We know that thousands of square miles of the earth's surface, are yet incapable of being brought under cultivation. But the fertilizing process goes on, and though nature's operations are slow, the time will doubtless come, when even the sandy deserts of Sahara, will yield the richest harvests.

IV. A fourth point in the contrast between the antediluvian earth, and the earth that now is, has respect to the system of mighty rivers and lakes which diversify our present continents, but which must have been, nearly or altogether, wanting in the configuration of the former earth. Let us, for a moment, look at the geography of our globe, as seen in the light of geology.

When the ocean beds were upheaved, to form the continents on which we are living, at the same time, the two grand ranges of mountains—the Alleghenies on the east, and the Rocky mountains on the west, were elevated, and to this event alone, we owe the Mississippi river and the great valley which it waters.

The sources of the rivers are in the mountains. Water has always to flow down an inclined plane. It cannot flow up hill. It is for this reason that all the rivers begin or start from the hills and mountains. The rains pour down their sides, and these, driven onward by the resistless law of gravitation, excavate or dig channels for themselves. The channels or beds of all our rivers have been formed in this way.

The eastern slopes of the Rocky mountains, send the waters of the Missouri and other streams, in an eastern by a southeastern direction, wearing out their channels slowly, till they fall into the Mississippi. The waters of the Ohio and other streams, that start in the Allegheny range, pouring down from the western slopes, have to continue their course in a general southwest direction, till they fall into the same river, meeting the waters from the Rocky mountain range about midway; and the meeting of these tributaries forms "*the father of waters*," which runs through the centre of the great valley, constituting it, as De Tocqueville said, the greatest country on the face of the globe.

But why did the Mississippi flow in a general direction from north to south, seeking the Gulf of Mexico? Scientists would answer, that the law of gravitation would naturally compel it to flow in that direction. It could not flow westward nor eastward, as its course would be checked by the ranges of mountains before named. It could not flow northward, because the southern sea, or the Gulf of Mexico was the nearest ocean which it could fall into; as there was no sea in the north nearer than Hudson's or Baffin's bay, which

was too far away. The mouth of the Mississippi was, originally, at or near Baton Rouge. And as the sea or gulf must have extended north to that point, this explains, on geological principles, the general course of the great river in that direction, and to that point.

If these ranges of mountains had not been elevated, we should have had no Mississippi river. The mighty river, and the great chains of mountains, in which it has its source, did not exist on the antediluvian earth.

V. I ask attention now to one other point in the general contrast between our present earth, and the former earth now beneath the ocean waves, and that has respect to the great longevity of the primitive generations of mankind, as compared with the brief span of life allowed to mortals in these later ages.

According to the Mosaic Record, Adam lived 930 years; Seth his son, 912 years, and Noah the last of the generations before the flood, lived 950 years,—a traditional record that seems almost fabulous, when we think of the brief threescore and ten, as the age allotted to man in these last days. Indeed, not a few have professed an entire incredulity, as to this extreme longevity of the former denizens of the earth, as being something out of the order of nature, and therefore impossible, or, certainly, improbable. But a very slight attention to the history of the case, and to the principles of physiology, will show that in the physical condition of the earth in that primordial age, as we learn it both from the Bible and from geology, the inhabitants must have lived to an extreme age.

The abbreviation of human life was begun, it would seem, immediately after the flood, and the curtailment

of it was gradual. We read that Shem lived 600 years, which was not so long as Noah his father lived, by 350 years.

Arphaxad the son of Shem, lived only 438 years, a less period than his father had lived by 162 years. And so, the graduation went on down, till it was arrested at our limited period of threescore and ten. The causes of this extraordinary reduction of the natural life of man, are such as must readily suggest themselves to any reflecting mind. I will enumerate three of these causes.

1. And first, I have already shown from the altered configuration of the earth's surface, that the causes of malarial sickness and epidemics, in existence now, were unknown in the first ages of the world.

Every pond, or pool of stagnant water—every swamp that poisons the atmosphere, impregnating it with disease and death, was caused by that great physical change in the earth's surface, which has been already fully described.

In the morn of creation, when the earth was fresh and pure from the hand of the Creator, there were no poisonous vapors—no stagnant, putrid waters—no death-dealing marshes or swamps to generate fevers, cholera, agues and other epidemics. Every breath of air that came in contact with the lungs, was perfectly pure and healthful.

2. Another principal cause, to which the curtailment of human existence is to be attributed, is the great and universal degeneracy of the race since Adam's day.

Adam and his immediate descendants, had a perfect physical constitution. God made man perfect, as to

his body as well as his mind. They had inherited no diseases from sickly, diseased, or consumptive parents. They were perfect in their physical organizations from birth; and, inhaling only the purest atmosphere, and drinking the sweetest waters, we can hardly imagine any cause or causes, to cut short human existence in those early ages, except self-abuse, in some form, as violence, excess of wine, gluttony, or other excessive indulgence of the appetites and passions.

It is known that half the children that are born in our degenerate times, die before they are five years old, because of the seeds of death sown in their systems by depraved parents. This infant mortality could not have existed on the primeval earth. We see, sometimes, a whole family of interesting sons and daughters, following one another in quick succession to an early grave, cut down by wan consumption, transmitted to them from a consumptive mother, or a consumptive father, or perhaps, from both. Or, if it is not consumption, it is some other disease. Experience and observation both teach, how surely diseases, as well as other properties of mind and body, are transmitted from parents to children.

Nature and Revelation concur in the solemn truth, that, "the iniquities of the fathers are visited on the children, to the third and the fourth generations of them that hate God."

The degeneracy of the race, once begun, must go on, increasing more and more. If a fountain is corrupt or impure, the stream flowing from it, must be impure. There is no law by which a stream can rise higher than its source.

Every poison that goes into the human system, infects the blood. And that poisoned blood goes from parent to child. And children are sure to inherit the nature of their parents, and even the diseases of their parents. What a solemn consideration for those assuming parental obligations!

3. Last, but not least, among the causes that contributed to shorten human life, was the entire change in the food of mankind, after the flood. I say that there was an entire change. The law that was enacted for the subsistence of man on the primitive earth, is contained in the 1st chapter of Genesis, and is as follows:

"Behold, I have given you every herb, bearing seed, which is upon the face of all the earth, and every tree in which is the fruit of a tree, yielding seed, to you it shall be for meat."

This was the original law in regard to food, and animal food was never used by the inhabitants of the antediluvian earth. The law permitting the use of animal food, was enacted just after the flood, and is in these words:

"And God said, Every moving thing that liveth, shall be meat for you; even as the green herb have I given you all things. But flesh with the life thereof, which is the blood thereof, shall ye not eat."

Physiologists and those who have devoted attention to this study, will tell you that the use of animal food is not favorable to longevity. This is an important subject, and it is much to be regretted that physicians and physiologists, to whose province it belongs, have

not given as much study to it, as the interests of society certainly demand.

I cannot dwell on this subject, but will invite attention for a moment to the vegetable diet of the antediluvians, who lived to such a great age. For, I presume, there are those who want to live long. It is not, perhaps, generally understood, that the vegetation of the former earth, was greatly superior to that of the present earth. But we are not entirely without any facts or data that throw light on this subject. Malte Brun says of Egypt, a rainless country:

"The economical year presents a perpetual circle of labors and enjoyments. Every month in the year has its harvests. There is hardly a fruit, or flower, or grain, or plant, that grows anywhere on the earth, that is not cultivated in Egypt. Their diet is mostly vegetable. It is said that it costs less than three dollars to raise a child to maturity. The American counterpart of Egypt, in this physical condition, is Peru, the coast of which is a rainless district. In these rainless regions, the fruits are the richest and the most variegated, the flowers are the sweetest and the most beautiful."

This is what Malte Brun says of rainless countries. And we have already seen, that, the whole antediluvian earth was a rainless country. Another eminent naturalist says:

"It is only in the regions of little rain, but heavy dews, that the fruits of the earth attain the greatest perfection. Dewy Persia affords the richest peaches, almonds, and nectarines, the most dainty lemons, pomegranates, citrons, melons, figs. Arabia the happy, with

her deserts and her dews, furnishes fruits as exquisite as Persia, and as redolent with the odors of her spikenard and saffron, her aloes, frankincense and myrrh, and her aromatic coffee."

These rainless countries are but little epitomes of the antediluvian world, as to its soil, climate, and productions. It is said, that, if you walk with a Syrian in his garden, he plucks an orange, cuts it in two, throws one-half away, and presents you with the other. This he repeats again and again, and if you ask him, why he is so wasteful, he politely answers, that he only bestows upon his friend, the sunny side of his fruits.

A moment's reflection will satisfy any one, that the change which took place in the vegetable kingdom, must have been very great. Imagine a land where the fruits and flowers enjoy perpetual sunshine, where there is a perfect atmosphere, and where there is never too much nor too little moisture, and you can imagine that, there, the vegetation would be perfect.

But how different on these lands, where nothing is constant or sure—where storms and clouds sometimes hide the sun for weeks, and the vegetation of all kinds is inundated with floods, or where the fruits and flowers are sometimes consumed by drouth, and never come to perfection.

Here the question might be asked—if animal food was not allowed before the flood, why was this new law, permitting the use of it, enacted just after the flood? I can conceive of two reasons:

1. One is certainly to be found in the changed condition of the earth. Whereas, every acre of the primitive earth was covered with the richest soil, the new

continents were the old ocean beds, much of which would require a lapse of hundreds or thousands of years, before they could be brought into a state of cultivation. Most of the land now cultivated, is covered with a loam or soil, from a few inches to a few feet in thickness, which has been formed since the upheaval. And if we dig down through that thin coating of soil, we come to the original sea bottom—the bed of sand and gravel, or the limestone over which the ocean formerly flowed. There seemed, therefore, a necessity to extend the original grant, which allowed the use of vegetable food only, so as to include the use of animal food also, in order that the earth in its changed aspect, might feed a dense population. It seemed a necessary provision.

2. The subsequent history of the world, I think, shows that there was another reason. After the waters of the deluge had subsided, God said that He would "not again curse the ground, any more for man's sake, because the imagination of the thoughts of his heart was only evil continually." And just before the flood, and as the reason for sending the flood, He had said, almost in the same words, "I will destroy man from off the face of the earth, because that every imagination of the thoughts of his heart is only evil continually." It seems as if God had said, man is vile still, and he will only be vile, though I should again drown the world for his sake. And I will not again curse the ground—but let him die in infancy—let him fall a victim to his own appetites—let him feed on whatsoever he will, that he may perish in the morning of life. And this has been the lot of the race since the flood.

The permission to eat anything and everything implied a curse as well as a blessing. It is sad to think that half the human family die before they are five years old!

Who does not know that while drunkenness slays its thousands of victims, gluttony destroys its tens of thousands? They fill their systems with disease which they transmit as a legacy to babes unborn!

The epicures and gourmands who make, as the Scripture says, their belly their god, seem all unconscious, that the fat meats and the highly seasoned dishes on which they daily gorge themselves, are the little devils that create their gouty pains, and their rickety limbs, and send them galloping off to apothecaries' shops; and, at last, to an untimely grave; while, if they have any heirs, they transmit to them the seeds of their own self-inflicted tortures. This is a theme for a volume. O that some one competent to the task, would write a book on the subject! He would merit the lasting gratitude of posterity.

CHAPTER IX.

The Theory of Evolution a Fiction, and the Consummation of all Follies.

What the Evolution philosophers believe—Contrasted with the Pythagorean belief—What a popular preacher said recently—Synonymous words—Pantheism, atheism, evolution—How life began—Extract from "Vestiges of Creation"—From a Christian geologist—Four great types of life—Man from a monkey and from a fish—A close calculation in the "North American Review"—Six objections to the theory of evolution—It is an attempt to legislate God out of the universe—It has no foundation—Not one geological fact to support it—Testimony of Miller, Sedgwick and Agassiz—Darwin's early progenitors of man—What the Duke of Argyle says—Max Muller—Sir George Mivart—Protest of Agassiz—Darwin's doubts and complaint—The faculty of speech not developed—Max Muller—Prof. Huxley—Darwin caught a glimpse—Another case of development, the Electric Ray—Mechanism of the eye—Prof. Tyndall's theory—Evolution is pantheism—An evolutionist not a Christian—Huxley's pretended demonstration—Evolution of our horse from the bones of animals that perished in the cold of the Arctic age.

EVOLUTION is *materialism.* It *deals alone with matter.* The same matter that forms the effulgent body of the sun, constitutes the opaque mass of the earth, as our modern evolution philosophers believe. The same matter that enters into the composition of the body of a fish, a dog, or the stalk of a plant, makes the brain of a Newton or a Plato,—so they teach. The only difference is in the different arrangement or combinations of the atoms of matter among themselves. As all have the same origin, all must tend to the same destiny. There is nothing but

matter—passing from change to change—eternally changing, and yet forever obedient to the uniform laws of nature, as these philosophers say.

This is the new and now popular philosophy of our day. It is not exactly the old doctrine of Metempsychosis, held in Egypt and Syria in days of yore, ere the light of Christianity had shed its rays over the darkness of the old world, though the modern theory may be only a new or developed phase of that old philosophy. There is a slight difference—just the difference there is between transmigration and transformation. The bodies perpetually succeed one another, and are ever passing through modified forms. But the old pagans held to the existence of souls as well as bodies, and that these endlessly diversified forms were but the tenements of souls. They believed that the changes in these outward physical structures, resulted rather from the action of spirit on matter, than from any law or property essential to matter itself, as maintained by modern evolutionists, who do not believe in the existence of spirit.

The several forms of infidelity once rank and rife, seem now to be all absorbed into this new and patent theory of evolution. It explains every thing. It solves all difficulties. The scientists of the present day can hardly write an essay on any subject, or deliver a lecture from the public platform, without a tribute or an allusion to this wonderful philosophy, as the great revealer of all secrets. Take the following as a specimen, from a popular preacher, who said, recently in one of his pulpit ministrations, as reported in the papers:

"If I go out of human history into the history of the irrational and inanimate creation, shall I not see the work of this unseen force, which we joyfully call God, bringing every shape of animal and vegetable life into more perfect conditions? All men who think, and search out nature's secrets, see this grand result. In man and nature, this work goes on. Shall not past experience be the ground of future hope? Shall not this secret which nature and history are speaking to eye and ear, be the reconciling thought of a better Christianity, which shall be creedless—which shall have no heresies except insincerity and uncharitableness?"

This is the theory of evolution in a nut-shell. It is not Christianity. But the hope is expressed that there is to be something better than the Christianity men have known in the past. It is the unknown force in nature which they "joyfully call God," which is bringing every shape of animal and vegetable life, as well as man himself "into more perfect conditions." And the hope is expressed that the better form of Christianity which is coming, will be "*creedless*." For, indeed, what use or necessity can there be for a creed to those who have no souls—no immortal natures—to those who have the same parentage as the ape, or the goat, and who are, of course, tending to the same destiny? What need can there be for a creed to man any more than to other animals, when they are, alike, only matter, with no difference except in the external shapes or forms into which they have been thrown, by the uncertain and everlasting motions of the molecules?

If I affirm that this modern form of philosophy—evolution—is pantheism, I run no risk of being justly

charged with misrepresentation. The same preacher said in the Sunday discourse:

"It is almost impossible to conceive of any personality, which is not hampered by limitations analogous to our own; almost impossible to conceive of a power who is personal, and at the same time, omnipresent and omniscient. And, see how we become involved in intellectual difficulty, when we associate the idea of personality with that of a Supreme Creator. Dr. Clarke says, I do not believe in a God outside of the universe."

Dr. Freeman Clarke is another liberal or rationalistic divine. And in the above expression, he simply affirms that the universe is God, and God is the universe—"No God outside of the universe!" Of course, when there was no organic universe, there was no God; and if the universe should cease to be, God would cease to be. And, therefore, they can have no conception of a personal God. This is pantheism; and pantheism is, essentially, atheism. And the three terms, pantheism, atheism and evolution may be put down as synonymous terms.

This new philosophy covers the whole ground, and it has become popular from the fact that it has gone to the altars of science, and borrowed from thence a meteoric glare, which, the teachers think, gives lustre to the new system. But it is only "science falsely so called."

In several preceding chapters, I have examined the development theory, in its application to the growth of worlds. It is my aim, in this chapter to examine that phase of it, which may properly be termed *Dar-*

winism—or that phase of it, which has respect to the development of animal and vegetable life on this globe. Of course, there is no agreement among these philosophers as to the origin of life, as they know absolutely nothing about it. All they can do is to speculate, and give us their crude opinions. One of these opinions is thus expressed in the work entitled—"The Vestiges of Creation." The author says:

"The electric spark, escaping from the wild elements around it, struck life into an elementary and reproductive germ; and sea-plants, the food of animals, first decked the rude pavement of the ocean. The lichen and the moss reared their tiny fronds on the first rocks that emerged from the deep."

Again, he says:

"Born of electricity and albumen, the simple monad is the first living atom—the microscopic animalcule—the snail, the worm, the reptile, the fish, the bird, and the quadruped, all spring from its invisible loins"—yes, from the invisible loins of an invisible atom—but he goes on—"the human similitude at last appears in the character of the monkey; the monkey rises into the baboon; the baboon is exalted into the ourang-outang, and the chimpanzee with a more human toe, and shorter arms, gives birth to man."

This was the origin of life on the globe, and this was the order of progression from lower to higher forms of life, according to this system of philosophy. I express no surprise, that such writers as Prof. Oken, Prof. Huxley, Prof. Tyndall and others who acknowledge no personal God, should give utterance to such crudities, since as things do really exist, and they

deny the existence of a Supreme Being, the First Cause of all things, they must account, in some other way, for the existence of things, and this is probably the best they can do. But that a Christian philosopher, who professes to believe the Bible, should be carried away with these delusive errors, is what I cannot comprehend. It is almost impossible, for example, to believe that a Christian minister could have been the author of the following effusion, which is quite as extravagant as any ever conceived by an infidel mind. I quote it, merely to show what length one may go, in the utterance of "profane and vain babblings," when he has cut himself loose from God's word. The quotation is from a Christian geologist, Prof. Le Conte, who says, in his lectures:

"Animals are divided into four great types, or plans of structure, called respectively, vertebrates, articulates, mollusks, and radiates. We might compare these to different styles of architecture. We have several types of human architecture: the Eastern style, the Greek style, the Egyptian style, and the Gothic style. These may be variously modified, to adapt them to the various purposes for which buildings are used, and that, too, without violating the style. So, also, these four styles of Divine architecture, are modified to adapt them to the various purposes, for which animals are created, but without violating the style of architecture.

"Now, far back in the dark backward and abysm of time, there was a period, when fishes were the only representatives of the vertebrate plan of structure, or this machine was adapted only to locomotion in water. It was a swimming machine. Ages on ages passed away—æons upon æons—until the time was ripe, and

the earth was prepared, and reptiles were introduced. Now we have a new function, that of locomotion on land. Do we find a new organ introduced for this purpose? By no means. The same organ which was a swimming organ before, by certain modifications of its parts, without essential change, becomes now a crawling organ.

"Ages on ages pass away—æons upon æons—until the time was ripe and the earth was prepared, and birds were introduced. Here we have a new, a beautiful, a wonderful function—that of locomotion in air. Shall we not have a new organ for this? By no means. The same organ is again slightly modified, and becomes the wing of a bird. Ages upon ages pass away—æons upon æons—until the time was ripe, and the earth was prepared, and man was introduced —now we want another and most exquisite organ—we want a hand. But Nature's laws are not violated even for man—in the hand of a man, in the forefoot of a quadruped, in the paw of a reptile, in the wing of a bird, in the fin of a fish, the same organ is modified for various purposes."

Here, we see, the scientist attempts to show that no new organs are created, but that the old ones are developed, modified, and adapted to new purposes. Thus, the hand of a man, the forefoot of a quadruped, the wing of a bird, the paw of a reptile, and the fin of a fish, are not different organs, but the same organ modified, or developed one from another, wherefore, the hand of a man is only a modification or a development from the fin of a fish—and man himself is a fully developed fish, which required millions of years or æons for the development.

But now, I ask, what reason do they pretend to

give—for assuredly, they must have felt that it was imperative on them to assign some reason for this waste of ages—and for this tedious process, requiring that man, in order that he should exist at all, should proceed, first, from the invisible loins of a monad—and then from the loins of some monster of the deep, then from the loins of a reptile, then from the loins of a bird, a monkey, a baboon, a chimpanzee, etc.—what reason do they assign for this? Well, the Christian philosopher just quoted, says, "Nature's laws are not violated even for man." But what does he mean by Nature's laws? This is the very doctrine taught by the old Epicurean philosophers, 2,000 years ago, whose professed aim was to undermine the foundations of all religion. They taught that nature pursues her course, doing all things in accordance with everlasting laws, the gods never interfering with her operations. And this is the idea incorporated in all these various forms of evolution. But this Christian teacher should have reflected, as he had the Bible, and enjoyed more light than was ever vouchsafed to the old heathen philosophers, that the God of the Bible is the God of nature; and that He ordained all the laws of nature, and ordained them, of course, in accordance with His own most holy will.

The brilliant conceit of this author about the hand, the forefoot, the paw, the wing, and the fin, all being the same organ, only modified, developed, and improved in the progress of the ages, to adapt it to some new purpose—this idea may be original with this Christian scientist, but in carrying out the idea, he might have made the cases a little more parallel, by

remembering that, as the fish had a tail, and the reptile had a tail, and the bird had a tail, and the monkey had a tail, even better developed than any of the lower forms, man ought to have had the same organ, that belonged to the whole long line of his ancestors, far more perfectly developed than any of them. But, instead of this, we find the caudal appendage entirely wanting in man. And the scientist does not even attempt to explain the remarkable phenomenon why this organ was so suddenly lost or lopped off, instead of being developed, when the other organs were continually, more and more developed and improved through the long ages, and through every stage of his ancestry, up to man himself. Why was one organ so gradually and perfectly developed, and another entirely lost? Perhaps the author will explain when he shall revise his book, to publish another edition.

I give another passage from these writers on the development theory, for the purpose of showing what they believe, although they give no facts in support of their belief. It is from a late number of the "North American Review." You will understand that the philosophy must be quite popular, since it is advocated by all classes of writers, in all sorts of journals. The writer in the "Review" says:

"Ten thousand centuries before the time of Homer and the Vedic poets, wild men with brute-like crania carried on the struggle for existence, with mammoths, tigers and gigantic bears, long since extinct. And recent researches make it probable, that even this vast period must be multiplied six or eight fold, before we arrive at the time when men first appeared upon

the earth as creatures, zoölogically different from apes."

Here we have an arithmetical calculation, made by one of these scientists, that about one million years ago, the only men on this earth were wild men—by which, I suppose, ourang-outangs are meant—with brute-like crania, carrying on the struggle for existence, with tigers and gigantic bears now extinct—and that, at a period six or eight times more remote, that is, about eight million years before our historic times began, the ape was the highest type of man on this earth. And what is more—and this must be very strengthening to the faith of these scientists—they are assured that "recent researches" make this calculation very "probable"—yes, *highly "probable"*—they will just keep that in mind.

Here I want to bear testimony, that, those who adopt this philosophy, have strayed very far from the simple and plain teachings of the Bible.

1. In the first place, they have neglected to take heed to the admonition of the apostle, which saith—"Hold fast that which thou hast received, avoiding profane and vain babblings, and oppositions of science falsely so called, which some professing, have erred from the faith."

2. In the second place, they have put contempt on Moses, the servant of God, as one who was unacquainted with science, and who has, consequently, written a false account of the history of creation.

3. Thirdly, they have to put a construction on the sacred Decalogue which Moses himself never put on

that document, and never taught the children of Israel, thus, virtually blotting out the weekly Sabbath, an essential part of God's moral law ordained in Eden itself.

4. Again, their theory supposes that the age of plants—the Carboniferous age, when the coal beds were formed—a vast age, as they say, extending through several million years, was before God had ordained the sun, moon and stars, or, as Principal Dawson said, "before the final arrangements of our planetary system."

5. As the first living creatures were created on the fifth and sixth days, according to Moses, they must believe that the heavenly orbs shed their benign and effulgent rays on this earth, for millions of years before there was a living being to rejoice in that light, which would be a direct impeachment of the wisdom and goodness of God, as having lavished all that goodness in vain.

6. Their theory strips God of the attribute of Omnipotence, by supposing that He had to follow certain laws of nature, and to occupy millions of years in bringing such a creature as man up from a monkey or a monad, to his present position in the scale of existence—whereas, if God be omnipotent, it would be just as easy to create the body of a sun, or a star, as to create the soft down on the wing of a bird. What difference would it make, since no power short of infinite, could create anything from nothing, great or small!

There was no reason that can be conceived, for the invention of this development theory, unless it was to

enable the authors to dispense with the necessity for a creator and governor of this universe. If they could have life, in the first place, to begin or to originate in the sea, as Prof. Oken says; or "struck by an electric spark from some elementary and reproductive germ," as another sceptic says; or, as Prof. Proctor ventured to suggest before an intelligent audience in New York, if they could have all animal and vegetable life to begin on this globe, by the accidental fall of a meteoric body on its surface, then, indeed, they would feel that they are independent of the all-controlling power of God, and they could say, that this is a self-originated and self-governed universe.

A system of belief like this, may be quite congenial to an irreverent and sceptical spirit, but it is difficult to conceive how it can, for a moment, find place in a reverent and filial heart—or the heart of one who recognizes the fatherhood of God, who made the world and all things in it, and believes that He still exercises a paternal care and solicitude, for the helpless and dependent creatures whom He hath formed.

I shall undertake now to show, that there is no foundation in fact, or in science, for this evolution philosophy, and that the authors of it are, therefore, inexcusable for this deliberate attempt to legislate God out of the universe. They cannot advance a single reason, a single fact, or any other sort of evidence, in support of their theory. They have never seen nor known a single species, whether of animal or vegetable existence, no matter how minute, to be evolved from any other species. Hugh Miller says—and every real scientist must concur in what he says:

"All geologic history is full of the beginnings and the ends of species; of their first and their last days; but it exhibits no genealogies of development. The Lamarckian (evolutionist) sets himself to grapple, in his dream, with the history of all creation; we awaken him, and ask him to grapple with the history of a few individual species—with that of the mussel, or the whelk, the clam, or the oyster; and we find from his helpless ignorance and incapacity, what a mere pretender he is."

"A mere pretender"! This is the stern but just rebuke administered by science herself to such as Charles Darwin, John Tyndall, Prof. Oken, Prof. Huxley, and the whole host of lesser lights. I have said before, as I now say, and I proceed to the proof of the statement, that they have not one solid, scientific fact, as a proper basis, for this development theory. Now, let us analyze it, and sift it to its foundations. In England, the name of Prof. Sedgwick stands high as a geologist; and what does he say? He says:

"We have visited the tombs and charnel houses of the old times, and we took with us this clue spun in the fabric of development; but we found this clue no guide through these ancient labyrinths, and sorely against our will, we were compelled to snap its thread; and we now dare to affirm, with all the confidence of assured truth, that geology—not seen through the mists of any theory, but taken as a plain succession of monuments and facts—offers one firm cumulative argument against the hypothesis of development."

That is very clear and positive testimony, and it ought to be conclusive in the mind of any geologist. To the same effect is the testimony of that learned and

noble scientist, Louis Agassiz. In one of his Cambridge lectures, he said:

"It is not true that all the earlier animals were simpler than the later. On the contrary, many of the lower animals were introduced under more highly organized forms, than they have ever shown since, and have dwindled afterward. Animals that should be ancestors, if simplicity of structure is to characterize the first-born, are known to be of later origin; the more complicated forms have frequently appeared first, and the simpler ones later, and this in hundreds of instances. The development assertion does not bear serious examination. It is just one of those results following the disclosure or presentation of a great law which captivates the mind, and leads it to take that which it wishes to be true for truth."

This testimony is in the most unqualified language, and we cannot mistake the import.

There never was a system or a superstructure of any kind erected upon such a sandy foundation, as this theory of evolution. What does Darwin pretend to give in support of it? Hear him. In his Theory, vol. 1, page 198, he says:

"The early progenitors of man were, no doubt, well covered with hair, both sexes having beards; their ears were pointed, and capable of movement; and their bodies were provided with a tail, having the proper muscles; the males were provided with great canine teeth, which served them as formidable weapons."

And again, vol. 2, page 372, he says

"Man is certainly descended from some ape-like

creature—a hairy quadruped, with a tail and pointed ears, probably arborial in its habits, and an inhabitant of the old world."

Now here are quite a number of very positive assertions; but I ask, if there are any facts or any proofs given, in support of these assertions, viz., that the progenitors of man were well covered with hair—that both sexes had beards—that their ears were pointed and capable of movement—that their bodies were provided with a tail, having the proper muscles, and that the males were provided with great canine teeth, which served them as formidable weapons? Must we receive these assertions of Mr. Darwin as facts, in the absence of all proof, merely on the authority of his word? Does he give us any reasoning—does he offer any proof, or give a single fact, to establish any of his assertions? Not one! The nearest attempt which he makes at proof, is when he says, there was "no doubt" of it; and again, when he says, that, "*probably*," it was so. And yet we have thousands of educated men, who receive his unfounded assertions —his idle conjectures as if they were gospel truths. The Duke of Argyle, who is a good authority, says:

"The various hypotheses of development, of which Darwin's theory is only a new and special version, are indeed, destitute of proof; and, in the form which they have as yet assumed, it may justly be said that they involve such violations of, or departures from all that we know of the existing order of things, as to deprive them of all scientific basis."

Max Muller says:

"When I listen to the language of evolutionists, I almost imagine I am listening to one of the most ancient hymns of the Veda; and that we shall soon have to say again, in the beginning there was the golden egg, from which the earth was hatched."

Sir George Mivart, in his "Genesis of Species," says:

"Though by no means disposed, originally, to dissent from the theory of 'natural selection,' if only its difficulties could be solved, I have found, each successive year, that deeper consideration, and more careful examination have, more and more brought home to me, the inadequacy of Mr. Darwin's theory. In spite of all the resources of a fertile imagination, he is reduced to the assertion of a paradox as great as any he opposes."

Agassiz entered an earnest protest against the evolution theory, saying:

"I wish to enter my earnest protest against the transmutation theory." Again, he said, "It is my belief that naturalists are chasing a phantom in their search after some material gradation among created beings, by which the whole animal kingdom may have been derived, by successive development, from a single germ, or from a few germs."

And now, I ask, is Darwin satisfied with his own speculations? We can hardly imagine this to be the case, when we hear him expressing his deep regrets that he stands almost alone, and that the old and the honored chiefs in natural science are nearly all opposed to him. In the introduction to his "Descent of Man," he says:

"Of the older and honored chiefs in natural science, many, unfortunately, are still opposed to evolution in every form."

And in another passage he complained, saying:

"Authors of the highest eminence seem to be fully satisfied with the view that each species has been independently created."

Again, he says:

"The transitional forms not being found; the sudden manner in which several groups of species first appear in European formations; the almost entire absence as at present known, of formations rich in fossils beneath the Cambrian strata, are all undoubtedly difficulties of the most serious nature. We see this in the fact that the most eminent palæontologists, namely, Cuvier, Agassiz, Barrand, Pictet, Falconer, E. Forbes, etc., and all our greatest geologists, as Lyell, Murchison, Sedgwick, etc., have unanimously, and often, vehemently maintained the immutability of species."

There can be very little satisfaction to a man who finds himself advocating a theory, which is in opposition to all the facts of science and nature, and especially, when, by this opposition, he has separated himself from the company of the wise and the good in every department of learning.

There is another argument against the transmutation theory, which I must not omit. I now allude to the argument founded on the faculty of speech, which is peculiar to man. If man sprung from an inferior

animal, how did he acquire the organs of speech—how was the faculty developed in him?

In one passage in his writings, Mr. Darwin attributes the origin of speech in man, to his having acquired a higher intellectual nature; but in another passage he attributes his higher intellectual nature, to his having acquired the faculty of speech. This is reasoning in a circle, and the reasoning may be satisfactory to a disciple of Darwin, but it can never satisfy a scholar, or a man of science. Let us hear what the learned Max Muller says, on this question of the origin of language. In his philological lectures, he said:

"It becomes our duty to warn the valiant disciples of Mr. Darwin, that, before they can claim a real victory, before they can call man the descendant of a mute animal, they must lay a regular siege to a fortress which is not to be frightened into submission, by a few random shots—the fortress of language—which as yet, stands untaken and unshaken on the very frontier, between the animal kingdom and man.".

This argument of Max Muller cannot be met except by reasoning in a circle—a mode of reasoning very familiar to some of these new philosophers. The organs of speech are wonderful. Who believes that they were developed, and not created? There are numerous muscles, fibres, and nerves connecting with the lips, teeth, jaws, tongue, and the glottis. The voice, and the articulation of sounds, depends on the arrangement and combination of these, so complicated and numerous as almost to defy dissection. Even Huxley, evolutionist though he be, said:

"If you were to alter, in the minutest degree, the proportion of the nervous forces now active in the two nerves which supply the muscles of my glottis, I should become suddenly dumb. The voice is produced only so long as the vocal chords are parallel; and these are parallel only so long as certain muscles contract with exact equality; and that again, depends on the equality of action of those two nerves I spoke of. So that a change of the minutest kind in the structure of these nerves, or in the structure of the part in which it originates, or of the supply of blood to that part, or of one of the muscles to which it is distributed, might render all of us dumb."

This wonderful machinery, or apparatus, which was evidently *contrived* and *designed* for the purpose of speech, is not found in any of the inferior animals. And I repeat the question, who can believe that it was developed, and not that it was created?

In this discussion, I almost seem to myself to have been fighting a windmill. This new system—the evolution theory, rises up to my view almost like a dream or a myth. I find it difficult to believe that the theory has a real existence, or that there are sensible and educated men who believe it. Because the belief of it implies an inversion of all the laws that govern belief. They have to believe it not only without evidence, but against evidence—not only without a single fact on which to rest their belief, but contrary to all the accumulated facts of nature, which overthrow the theory.

It seems as if a state of blindness or darkness had come over their minds. They do not like to retain God in their knowledge, and He gives them up to a

delusion. I will offer an instance or two, to show the nature and extent of this blindness.

Mr. Darwin caught a glimpse of the earliest living things—"leathery sacks"—cleaving to the fragments of rocks found in the primeval seas, which were developed in the course of ages, into fishes. And what was the process, or how was this done? By the action of the waters, a certain rugosity or roughness was increased in size, till it grew into a fin. In the course of ages another rugosity appeared on the opposite side, just in the right spot. This also was increased in size, gradually, by the friction of the waters till it grew into a fin, a perfect match for the other. Now after many ages there was a pair of fins, and this process is transmitted to posterity, and the animal is a fish.

But as a single pair of fins is not enough for a fish, another roughness or rugosity near the other end of the body appears; and this also by the fortuitous rubbing of the water, in the course of other ages, is worked into a third fin. But as three fins were not enough, a fourth rugosity appears directly opposite to the third fin—just in the place where it was required—and this, by friction and rubbing against the water, is increased in size, till it grows into a fourth fin. And now the fish is furnished, and prepared for rapid locomotion in the waters. But this process of evolution has required the lapse of æons upon æons.

This is not all. After other ages and æons have passed away, the front pair of fins are developed into wings, and now the fish is a bird. After another series of ages, the wings become paws, and the bird is

changed into a carnivorous beast. This evolution goes on, till the paws become the hands of a man. And if we ask, how all these changes are effected, we are told, that it is by evolution—and that this is nature's law. We are told that there is nothing like design or intelligence in it—that it is all accomplished by the accidental and fortuitous motions of the atoms. This is Darwinism.

Take another case of development. There is a fish called the torpedo, or electric ray, furnished with a galvanic battery, with which it can dart lightning, and kill or intimidate its enemies. In this living battery, according to Prof. Owen, are no less than 940 hexagonal columns, like those of bees' combs, each of which is subdivided by a series of horizontal plates, analogous to those of the Voltaic pile; the whole supplied with a great amount of nervous matter, four branches of which are as large as the animal's spinal cord, and these spread out into a multitude of thread-like filaments round the prismatic columns, finally pass into all the cells—an arrangement altogether strikingly similar to that by which an electric current through a coil and round a magnet, is used to intensify the magnetic force. In this is displayed the most wonderful knowledge of the complicated laws of nature. But this machine, with its columns, plates, coils, cells, muscles, ligaments, united and combined with unerring skill, into the most scientific mechanism that can be conceived, according to Mr. Darwin, was developed, not created. This masterpiece of skill, contrivance and design, surpassing any that mortal man was ever able to put forth, was not the product of knowledge,

wisdom, or design, but of a series of accidents, and fortuitous variations, occurring through infinite ages. Such an idea contradicts reason, and confounds all imagination! Yet, there are some educated men, who will acknowledge that they entertain the idea. But if we ask them, why they have embraced such a theory, they give no reason, except that Mr. Darwin has said so, and with this they are satisfied.

Prof. Tyndall accounts for the mechanism of the human eye, by saying, that it is owing to the action of the light on the surface of the skin, "that becomes localized in a few pigment cells, more sensitive to light than the surrounding tissue. At first there is a little bulging out of the epidermis over the pigment granules. 'But the adjustments continue, and, at length, a lens begins to appear." After "infinite adjustments," he says—variations or changes innumerable—of course, he cannot say how great is the number—but after infinite adjustments that occur among the atoms, at length an eye is developed. They believe that the organ of sight was developed, not created nor designed. There is the common housefly, with its 8,000 perfect lenses—4,000 in each eye—all of them formed alike, and perfectly adapted to the purpose of vision, though no larger than the point of the finest needle. A professor in a German university—Leuenhaek—having adjusted the eye of a fly, could see, distinctly, in each of these diminutive lenses, the whole steeple of a church which was 300 feet high, and 750 feet distant. Then, turning it towards a neighboring house, he saw through many of these little hemispheres, not only the front of the house, but also the doors and

windows, and he could discern distinctly whether the windows were open or shut. A writer says:

"Such a piece of mechanism transcends all comprehension, and is to be reckoned among the highest and most marvellous of animal organs. Yet we find this very organ, in all its completeness, beauty, and efficiency, in the trilobites of the dim and immeasurably remote Silurian epoch."

And this, as they believe, is a case of evolution. It is evolution that produces, or develops, in the head of each common housefly, 8,000 perfect optical instruments—all adapted to the purpose of vision—and all fashioned exactly alike, as if they had been modelled according to an exact pattern made in eternity. This is the law of development, and this is what they profess to believe. And is it not true that, as I said, a judicial blindness has happened to them, because they did not like to retain God in their knowledge?

The theory of evolution is, essentially, pantheism, as I stated at the beginning of this chapter. It excludes the idea of a personal God. And when we have lost sight of the personality of God, we necessarily become atheistic. A God who cannot be known or worshipped; is no God to me. When a man avows that he cannot conceive of a God, apart from the organic universe itself, we need inquire no farther, to know what are his religious views.

The rationalistic preacher, from whom I gave a quotation, distinctly and positively affirmed, in the same discourse, that no revelation of God can ever be made to the intellect, or to the knowing faculties of man.

Now, that is a proposition almost startling, when we consider that it came from a modern Unitarian preacher, who stands high in his denomination, as an expounder of the Revelation which God has given us.

He asserts that it is impossible, for a revelation of God ever to be made to the intellect, or the knowing faculties of man. How then would it be possible for God ever to be known by man? And besides, if God could not make such a revelation, what is this but to say, that He never has made such a revelation of Himself to man? Then our belief that the Bible contains such a revelation, must be a mistake. For what is the Bible, if it is not a revelation of God, and a revelation from God to man? But if we accept the dictum of this philosophic preacher, we must say, that no such revelation ever has been, nor ever can be made to the intellect of man.

This preacher is an evolutionist. And this is the logical tendency of the philosophy. If a man accepts the philosophy, he must accept it with all its logical consequences. And what I affirm is, that when a man is an evolutionist, he is necessarily a pantheist. And when a man is a pantheist, there is no place in his creed for a personal God, and he has no use for the Bible, or any revelation from God. And if this is not bald, bleak, black atheism, it is very near akin to it.

And if a man is an atheist, he is without hope in the world. For to be without God, is to be without hope, as the Scriptures teach.

In conclusion, I would say, that it is impossible for one who has adopted the evolution theory, to be a Christian. For a Christian is one who believes in

Christ. And Christ was not only man, but God. He was the God-man. He did not come into existence by the process of evolution, nor by descent from a lower species. And Christ came into the world to save sinners, by the sacrifice of Himself on the cross. And Christ rose again from the dead. But these are points of doctrine—they are fundamental facts in the Christian scheme, which no evolutionist believes, nor can believe, consistently with the evolution philosophy. The disciples of Darwin do not believe that men have souls, or that they were in need of the salvation, which Christ came to bring. And they do not believe that Christ himself was anything more than a natural man, who was generated as all other men, from a lower species. And this doctrine subverts entirely the very foundations of Christian faith. It is a contradiction in terms, to say that one who is a professed evolutionist can be a Christian. And I would say further, that, when one who is a church-member, announces himself an evolutionist, let the officers of the church, if they cannot convince him of his error, exclude him at once from their fellowship. As we read in Revelation, a little leaven leaveneth the whole lump. There was one man in the church, who, going over to this false system of philosophy, and remaining in the church, has carried hundreds of other church-members along with him. If a useless or poisonous weed springs up in your garden, it is better to dig it up and throw it out, than permit it to cumber the ground, preventing the growth of other and useful plants.

I will close with just a word more, for I would have every one look at this evolution theory as it is. The

noblest animal known to man—the horse, which we ride and drive, Mr. Huxley says, was evolved from the pheiohippus—that the pheiohippus was evolved from the meiohippus—and that the meiohippus was evolved from the eohippus. He says that all these animals were possessed of *three toes* instead of one solid hoof. He says that these animals were two to three feet in height, and that they lived on this globe, previous to that cold age, called the glacial period, when, as Agassiz and other geologists say, all the races of animals in these temperate zones were destroyed by the cold, and became extinct. Therefore, if our present horse was derived from those ante-glacial animals, it must have been developed from the fossil bones of the dead animals, and not from the living animals. But if you ask Prof. Huxley, from what animal the eohippus was developed, he says, from the orohippus, an animal still more remote in the ages of antiquity, which has never been discovered, but which, if it could be discovered, would be found to be an animal of five toes. This is what Prof. Huxley, one of the masters of evolution, says.

And, if you ask again, how long this evolution has gone on—Mr. Huxley says, that if the geologist is right in his calculations as to time, it has probably taken 500,000,000 years for our horse to develop from the orohippus, and that evolution is a slow process, requiring a great deal of time. If you ask, finally, what the orohippus was developed from, he tells you, "from the gelatinous mass, which is the foundation of all life." And then, he tells you once more, that the gelatinous matter was evolved from the nebulous

matter, or the star dust. And there he has to stop. That is as far as he can go. Can any one believe such a dream? Yet there are some who profess to believe it. But I must say, it is impossible to believe it, without ignoring God.

SUPPLEMENT.

It was some time after the chapter on evolution had been written, that the author had his attention called to the elaborate discourse, delivered before "The American Association for the Promotion of Science," at Saratoga, N. Y., by O. C. Marsh, of Yale College, the retiring President. In some respects that address is a remarkable document.

The Professor thinks that in looking over the records of palæontology, its history may be, conveniently, divided into four periods, well marked by prominent characteristics.

1. The first period, he supposes, to commence as far back as the time of Aristotle; or when men first began to notice fossils, and to speculate concerning their origin and nature, and to extend down to the beginning of the 18th century, when, he thinks, the question as to the nature of fossils was, at last, finally and definitely settled.

2. The second period covers the 18th century, and the characteristic belief of this period, he says, was, that the fossil remains found on the mountains, and everywhere, had been deposited by the Noachic deluge. It took a hundred years for the few wise and clear-headed men now and then raised up, to dispel this delusive error, maintained principally by the theolo-

gians. For, in that age, the Professor tells us, that "the general public believed what they were taught. And this was a great obstacle to the progress of science." The Noachic flood, he says, was thought to have been universal, and was "the only general catastrophe of which the people of that day had any knowledge or conception." Among the courageous and far-seeing men enumerated by him, who combated "the theologians," was Voltaire, who, he says, "ridiculed effectively and justly the cosmogonists of his day." And yet Prof. Marsh admits that this effective and successful opposer of the Mosaic cosmogony, accounted for the shells on the Alps, as of Eastern species, which had been dropped there by returning pilgrims from the Holy Land. But, he says, the question was settled, and the age of superstition passed away, and "with freedom of thought, came definite knowledge, and certain progress." This is the word of a President of the so-called "Association for the Promotion of Science"—"*definite knowledge*, and *certain progress*." But we must say, that, if this is to be recorded as one of the triumphs of science, it will not be difficult to forecast the future.

3. The third period in the history of palæontology, according to this arbitrary reckoning, embraces and covers the first half of the 19th century. This "branch of knowledge," he says, "became now a science. Method replaced disorder, and systematic study superseded casual observation." But he affirms that a characteristic feature of this third period was, "the general belief that every species, recent and extinct, was a separate creation." Among the writers of this

age, he names Cuvier, who, he says, was "the most famous naturalist of his time." Yet, he affirms, that "the philosophical breadth of Lamarck's conclusions, in comparison with those of Cuvier, is clearly evident." Cuvier believed in the permanence of species, but Lamarck is the father of the development theory. And this is the incontrovertible argument which demonstrates the philosophical breadth of his views, as compared with those of Cuvier, "the most famous naturalist of his time." It was Lamarck, who reasoned as follows:

"The giraffe was not gifted with a long flexible neck, because it was destined to live in the interior of Africa, where the soil was arid and devoid of herbage; but being reduced by the nature of that country to support itself on the foliage of lofty trees, it contracted a habit of stretching itself up to reach the high boughs, until its neck became so elongated, that it could raise its head to the height of twenty feet above the ground."

Prof. Marsh is, doubtless, very familiar with the writings of Lamarck, and probably, the above was one of the passages which forced upon his mind, a conviction of the philosophical breadth of Lamarck's conclusions, in comparison with those of Cuvier. But the Professor almost entirely ignores the other great naturalists of that third period, such as Lyell, Sedgwick, Humboldt, Buckland, Hugh Miller and others, who, in his judgment perhaps, were about as deficient in philosophical breadth of views as Cuvier, since they were all equally opposed to the theory, by which the giraffe is supposed to have acquired its elongated neck. Lyell says, in opposition to Lamarck:

"I must here interrupt the author's argument, by observing, that no positive fact is cited to exemplify the substitution of some entirely new faculty or organ, in the room of some other, supposed as useless.

"The plain truth is, there were no examples to be found; and where Lamarck talks of 'the efforts of internal sentiment,' 'the influence of subtle fluids,' and 'acts of organization' as causes whereby animals and plants may acquire new organs, he substitutes names for things; and with a disregard to the strict rules of induction, resorts to fictions as ideal as 'the plastic virtue,' and other phantoms of the geologists of the middle ages.

"It is evident that if some well-authenticated facts could have been adduced, to establish one complete step in the process of transformation, such as the appearance in individuals descending from a common stock, of a sense or organ entirely new, and a complete disappearance of some other enjoyed by their progenitors, time alone might then be supposed sufficient, to bring about any amount of metamorphoses. The gratuitous assumption, therefore, of a point so vital to the theory of transmutation, was unpardonable on the part of its advocate."

The President of the "American Association for the Promotion of Science," must have had his reasons for overlooking such authors as Lyell, Miller, Sedgwick and Buckland, who made large contributions to science in this third period. But they did not agree with the father of the new theory. Hugh Miller says:

"The individual, they tell us, perishes forever; but then, out of his remains there spring other vitalities. The immortality of the soul is, it would seem, an idle figment, for there really exist no such things as souls; but is there no comfort in being taught instead, that

we are to resolve into monads and maggots? Job solaced himself with the assurance, that, even after worms had destroyed his body, he was in the flesh to see God. Had Prof. Oken been one of his comforters, he would have sought to restrict his hopes to the prospect of living in the worms."

Further, he says:

"The development theory is, practically, tantamount to atheism. For, if man be a dying creature, restricted in his existence to the present scene of things, what does it matter to him, for any one moral purpose, whether there be a God or no? If in reality on the same religious level with the dog, wolf and fox, that are, by nature, atheists, a nature most properly coupled with irresponsibility, to what one practical purpose, should we know or believe in a God, whom he, as certainly as they, is never to meet as his judge."

No greater geologist lived or wrote in this third period, than Mr. Miller. But Prof. Marsh does not even mention his name.

4. The fourth period began, as he says, about the middle of this century, and it is the period in which we now live. It was then that "a new epoch in science began." He says, "the time was ripe"—that "the belief in special creations was undermined by well-established facts slowly accumulated," and that it was Darwin, who "spoke the magic word—'natural selection'—and a new epoch in science began."

It would have been gratifying to some, at least, if the retiring President had named a few of "the well-established facts slowly accumulated," or had mentioned even one undoubted scientific fact, which had served to undermine the belief in special creations.

We have seen that such experts as Sedgwick, Lyell, and Miller had challenged in vain, the authors of the new theory, to produce even one fact. And to this day, we must confess that the challenge has never been answered. Not a fact has yet been adduced in support of the evolution theory. One of the main characteristics of this new epoch, the Professor says, is the belief that all life, living and extinct, has been evolved from simple forms, and also "the accepted fact of the great antiquity of the human race."

There are some, we regret to say, who profess to believe these dogmas. Whether they in reality believe them or not, is not absolutely certain. Dr. Virchow, of Germany, is an evolutionist. But he warns his friends against teaching it as a science—that it is only a problem—a speculation not yet proved—and that it ought not to be taught in the schools. Moreover, like Hugh Miller, he admonishes his friends that it has a dangerous tendency to Socialism. His words are very emphatic. At a meeting of German naturalists and physicians at Munich, he said:

"Now only imagine how the theory of descent—evolution—may be shaped to-day, in the head of a Socialist! Indeed, gentlemen, this may seem ridiculous to many, but it is very serious; and I only hope that the theory of evolution may not produce those horrors in our country, which similar theories have actually brought to our neighbors. Any how, this theory, if carried to its consequences, has an extremely dangerous side, and that the Socialists have a certain notion of it already, you will, doubtless, have remarked. We must make this quite clear to ourselves."

Virchow is not less a philosopher than he is a scientist, and he could foresee consequences, and trace a cause to its legitimate effects. And, indeed, if men and women are nothing else but *monkeys fully developed*, why should they not be atheists, as Mr. Miller argues? And why should they not be Socialists, as Virchow suggests? For are not monkeys and all the lower animals Socialists? This is what Hæckel argues, and he is at the present hour, the highest authority among this new school of philosophers. If we accept his teachings, we could be nothing else but Socialists, for this is the logical tendency of the theory, as Virchow intimates. Let us see what Hæckel teaches:

"Outside of all creeds and churches," he says, "there exists, in germ, in the heart of every man, a true natural religion, which is inseparably identified with our nature's best side.

"This moral law is more ancient than church religion; it is the development of the *social instincts of animals*. The beginnings of it we find among divers classes of mammals, birds and insects. Agreeably to the law of *association* and the division of labor, many individuals unite to form a *community*, a commonwealth. The existence of these commonwealths, necessarily depends on the reciprocal relations of their members, and on each one foregoing his individual interests, for the good of the whole.

"If we would understand the great force of the sentiment of duty in animals, we need only overturn an ant-hill. What do we see amid the ruin? We see thousands of ant-citizens all intent, not on saving their own lives, but in protecting the precious commonwealth

to which they belong. The doughty men-at-arms make sturdy opposition, when we would introduce our hand; the nurses of the young ones save the so-called 'ants'-eggs'—the nymphæ, on whom the future of the commonwealth depends; the industrious workers begin on the spot, with indomitable courage, to clear away the *debris*, and to construct a new dwelling-place. The wonderful degree of *civilization* found among ants, bees, and other *social species*, sprung, originally, from the rudest beginnings, just as our human civilization did.

"Nay, even the tenderest affections of the human heart, those which inspire all our poetry, we find, in germ, in the animal kingdom.

"So understood, the ethics of the evolution theory, does not need to seek for new principles; we have only to refer to their true bases the ancient precepts of duty. Long prior to all church religions, these natural precepts governed man's common and legal life, just as they governed the social life of animals."

Now this is socialism—this is communism. See how he lauds and extols the wonderful degree of "*civilization*" found among bees, ants, and other social species, and the "precious commonwealths," in which there is a community of property—a community of children, or "*nymphæ*"—attended by common nurses, wives or mothers. These are model institutions. And so understood, the evolution theory does not seek for new principles. Long prior to all church religions, he says—that is, probably, when man was a monkey—"these natural precepts governed man's common and legal life, just as they governed the social life of animals." What then is the inference? Why, let us be "*social species*"

—animals—monkeys, again, in their superior civilization; and have precious commonwealths again; and children, and nurses, and wives, and property all in common, and thus imitate "the wonderful civilization found among ants, bees, and other social species.' And are they not endeavoring to do this, in some places? We are informed, they have such a community, consisting of several hundreds of men and women, in Oneida, N. Y., though it is reported that they have somewhat modified their complex system of marriage. But this is only a temporary modification, forced on them by the pressure of an outside influence. When they shall succeed in bringing the sentiment of the public at large into harmony with their views, the marriage altar, the foundation of all public morality, will be utterly thrown down, and Socialism will prevail. We have quoted the exact words of Dr. Hæckel, which are of no equivocal or doubtful significance. Let every intelligent reader clearly understand what is the tendency of this doctrine. The Professor of Geology in Yale may not be ready to endorse all that is contained in Hæckel's statements, but he is as thoroughly an evolutionist as Hæckel, and he is doing his best to disseminate his system of philosophy and religion.

We take occasion again to challenge the Professor's statement, that "the belief in 'special creations' had been undermined by well established facts slowly accumulated." Not one well-authenticated fact has ever been produced. As Virchow declared in his grand Munich discourse:

"I should not for a moment wonder nor be alarmed, if the proof were found that the ancestors of man belonged to some other order of vertebrates. You know that just at present, I work, by preference, in the field of anthropology, but yet I must declare that every step of positive progress, which we have made in the domain of prehistoric anthropology, has really moved us farther away from the proof of this connection."

Now here is a distinct utterance from a man, the deepest thinker in Germany, who is devoted to these studies—an emphatic declaration that the more we search, the farther we get away from any positive proof, that man is descended from any lower order of animals. And yet, the Professor of Yale talks about "well-established facts." Can it be that the Professor mistakes mere hypotheses for facts? For example, in one of his expeditions in western America, he found the bones of a certain animal, somewhat resembling the bones of our modern horse—is that one of his well-established facts, that these extinct horses, though only two and a half feet in height, and having three toes instead of a solid hoof, were the ancestors of the existing species of horse? What sort of reasoning is this, but, as Principal Dawson justly characterizes it, "a monohippic or one-horse philosophy"—and then proceeds to say:

"Even supposing that there is some faint possibility, that the horse may have been derived from some previous species of equine animals, and what is even (if that can be) less likely, that we have some means of guessing the direct line of descent, such speculations

should never be placed in company with ascertained scientific results."

But the learned Professor has his speculation as to the derivation of the horse, and he seems so sure of it, that he even calls his speculation a *demonstration* of the result, in the following words:

"The evolution of the horse, for example, is, to-day, demonstrated by the specimens now known."

This method of generalizing we can think only equalled by Prof. Leconte's evolution of a man's hand from the fin of a fish, then from the wing of a bird, then from the paw of a monkey, while there was no evolution of the tail, but that essential organ of the lower animals was entirely and suddenly lopped off, when the process of the development had reached its very highest point. That one organ is developed and another suppressed, may be one of the "*well-established facts.*"

Another specimen of the well-established facts, is the assertion made by the Professor, that, by palæontological research, a general law as to brain-growth has been discovered, by "which it is known that all extinct mammals, and other vertebrates had smaller brains than those now living." And the inference is, that, extinct races of men had smaller brains than those now living. This is the fact, if we may take the learned Professor's mere statement for a fact. But in opposition to Prof. Marsh, let us quote Dr. Virchow, once more, who, as an anatomist and antiquarian, has not his superior. He says:

"Only ten years ago, when a skull was found, perhaps in peat, or in lake-dwellings, or in some old cave, men always fancied that they detected in it, evidences of a savage and quite undeveloped state; in short, they were ready to find the monkey type. There is now much less of this sort of thing. The old Troglodites, lake inhabitants and peat people, turn out to be quite a respectable society. They have heads of such a size, that many a person now living, would feel happy to possess one like them. On the whole, we must really acknowledge that no fossil type of a lower human development exists. Indeed, if we take all the fossil human remains that have been found hitherto, and compare them with what the present offers, we can maintain with certainty that among the present generation, there is a much larger number of relatively low type individuals than among the fossils hitherto known." And his conclusion is: "We cannot teach, we cannot designate as a revelation of science, the doctrine that man descends from the ape, or from any other animal."

Another of the "well-established" facts of Prof. Marsh, is the astounding assertion that, on the facts and evidence accumulated, it is a fair estimate that the antiquity of man reaches back for 250,000 years, or to the last glacial epoch! The absurdity of this statement is such, as to render it undeserving of a serious notice. There are no facts to sustain it. There is not even a plausible probability in its favor.

If, as they suppose, the earth was a body of nebulous matter, constantly cooling, it must have been too hot, 250,000 years ago, as it must be too cold 250,000 years hence, for human beings to exist upon its surface. But waiving this objection, a scientific calculation has been

made, showing the age of our Mississippi river to be less than 5,000 years. A similar calculation could be made just as easily by any scientist to show that if the river had been advancing into the Gulf, for the period of 250,000 years, there would not now have been a hillock nor a mound between the Rocky Mountains and the Allegheny ridges, but long ago, all would have been washed down as sediment into the sea.

We cannot even form a conjecture as to the facts on which Prof. Marsh rests his statement of 250,000 years, as the lifetime of man on this globe. Was it the discovery, several years ago, somewhere on the Pacific slopes, of a fossil man with a tail, which, for some time, created a lively sensation among our evolution friends, but which they subsequently found to their deep regret and mortification, to be only a fraud? Or was it the discovery of the skeleton of a man in New Orleans, at the depth of seventeen feet below the surface of the ground on which the city is built, which led to the belief that it had been deposited there at least 57,600 years ago, but which, it was afterwards found, had not been interred there over sixty years? Was it the finding of that piece of pottery beneath the bed of the Nile, which, it was supposed, must have been there many hundred thousand years, but, a little later, was found to be a piece of Roman manufacture, only a few centuries old? Was it the discovery of the pile dwellings in Switzerland, afterwards so readily accounted for, on the supposition of a very moderate lapse of time? These are fair specimens of Prof. Marsh's "well-established facts."

In order to falsify the Mosaic record as to time,

sceptics were in the habit, years ago, of relying very much on the mythical records of the Eastern nations as to their vast antiquity. But now, after thorough researches, by Oriental scholars, have shown the unfounded nature of those claims to antiquity, they have to look for proof elsewhere, and to depend on relics dug from old caves, and river beds, and ancient mounds, of which they know just about as much as the man in the moon. Hundreds of these evolution antiquarians are now diligently employed, in the search for these old relics.

In regard to all such relics, we may here, very appropriately, quote a paragraph from Cuvier's "Theory of the Earth."

"Lastly, the bones of the species which are, apparently, the same with those that still exist alive, are *never found*, except in the very latest alluvial depositions, or those which are either formed on the sides of rivers, or on the bottoms of ancient lakes, or marshes now dried up, or in the substance of beds of peat, or in the fissures and caverns of certain rocks, or at small depths below the present surface, in places where they have been overwhelmed by debris, or even buried by man; and although these bones are the most recent of all, they are almost always, owing to their superficial situation, the worst preserved."

To the same effect is the positive testimony of Sir Charles Lyell, when he writes:

"The comparatively modern introduction of the human race, is proved by the absence of the remains of man and his works, not only from all strata containing a certain proportion of fossil shells of extinct species, but even from a large part of the newest

strata, in which all the fossil individuals are referable to species still living."

The evidence furnished by two such witnesses, ought certainly to be considered as an offset to the bald assertion of Prof. Marsh, with nothing more than a phantom of his own imagination as proof, that the human race have existed on this earth for the period of 250,000 years!

Again, the assertion that "evolution is science"—and that it is "the key of the universe" that is to unlock all the mysteries of knowledge in the future, is not less wild and unfounded, than that regarding the antiquity of the human race.

Prof. Dana, who is considered as something of a scientist, and whom Prof. Marsh largely quotes, says on the subject of evolution:

"There are no facts sustaining the theory that species were made from species, by a natural process of growth or development. Without any known natural method of creation to appeal to, science is led rightly to ascribe the existence of plants and animals, each in its time and place, to Him alone, who created them in the beginning."

Here is a positive, unqualified statement from one of the most respected and respectable scientists now living, in opposition to the theory of evolution. We will now give a more extended quotation from another industrious scientist, Mr. S. W. Ford, from the conclusion of a series of articles, which lately appeared in the New York *Tribune*, but which, we hope, will be published in a more permanent form. He says:

"I will now add a few words upon the manner of appearance, of the classes and tribes under notice, and with these bring my observations to a close.

"In the lowest beds in which Trilobites are found at all, we meet with forms having nearly the greatest number of body segments known in the tribe, along with those possessing the smallest number; with forms of gigantic as well as of diminutive proportions; and with a rich and varied display of generic types. As I have pointed out in my second article, they do not appear at all in the lowest primordial rocks, but higher up, come suddenly upon the scene, full-armed and full-fledged, and without the exhibition of any premonitory symptoms on the part of the earliest Sponges, Brachiopods or Pteropods, so far as we can discover of their coming. The Cephalopods, Acephala, Crinids and Polyps make their first appearance in the same quiet and unexpected way, and the same is true of the Euripterids and fishes. In my judgment, the transmutation theory fails to account for these facts; and if animals possess, or have ever possessed, or are surrounded, or have ever been surrounded by any force or power competent, in the course of ages, to evolve an Orthoceras out of an Orthis, or a ganoid out of a Pterygnotus, such force or power remains to be discovered. The abrupt changes of form that are known to occur among certain animals in their larval or embryonic state, have been put forward as affording a probable explanation of the mode of origin of Silurian types; but the facts of Silurian life furnish no evidence of this; and few, I think, will be prepared to believe that the adult life of the Silurian world was in that universally embryonic condition, which the adoption of this mode of explanation, would require us to assume it to have been. In view of the whole case it seems to me as though the display of Silurian life had taken place in accordance with a definite plan, and

under the immediate supervision of an intelligent Author and Ordainer, whose work it is."

The above reasoning from observed facts has, we would say, the appearance of an *Inductive argument.* The writer, Mr. Ford, had given his time to careful observation—had noticed the facts, and then, he carefully and cautiously draws the conclusion which the facts will justify.

We have not forgotten that several years ago, a retiring president of the British Scientific Association, astonished the world by the declaration, that *the potency of every manner and form of life, is inherent in matter.* It would seem, that the retiring president of the American Association, aspired to go even beyond this, in the boldness and newness of his oracular demonstrations, as when he says:

"But if we are permitted to continue, in imagination, the rapidly converging lines of research pursued to-day, they seem to meet at a point where organic and inorganic nature become one. That this point will be reached, I cannot doubt."

Such a declaration proves nothing, and can prove nothing, only that the head of the Professor had been turned, in consequence of his being elevated to the presidency of an "Association for the Promotion of Science." In every age, from the time of Aristotle down to our own times, men of the acutest minds have labored at the problem, how to bridge over the chasm between the living, and the not living, without success. Now it is proclaimed that there is no such

chasm, to bridge over! that there is a point, soon to be discovered, "where organic and inorganic nature become one!" Is this an oracular declaration, or is it something more—a revelation? If an oracle, we have learned where Delphi is. And when you want an oracle, go to Yale, but don't send your dear boy.

CHAPTER X.

Natural and Revealed Science; The Knowable and the Unknowable.

Students of physical science—A higher order of students—Who are philosophers—The only knowledge that will satisfy—Vain efforts to philosophize—To prove that all things were developed from star dust—A first principle in philosophy—Huxley's biology—A man and a dog the same in their origin and destiny—The trouble with materialists—The knowledge of God a necessity—Confession of J. S. Mill—A warfare against humanity—Physical science does not meet the wants of man's nature—That knowledge must come by Revelation—Herbert Spencer's effort to prove an impossibility—His idea of environment—A stream cannot rise higher than its source—Development of races—China—Scotland—Development wherever the Bible goes—Moral and intellectual progress co-extensive—Grand themes of the Bible—The only study that can fully develop the human mind—Tested in Scotland.

THERE is a class of mortals so given to studies which have their foundation in pure matter, that they scarcely give any attention at all to their own physical being, and almost overlook the fact that they have a moral nature. I refer to the class of men who give their thoughts wholly to the study of the physical sciences. We call them physicists, and scientists. Their enjoyments are purely intellectual, being derived from their studies. Of course, they are of a higher nature than those of another class, whom we call sensualists. But as there is a limit to the attainments of these scientists, they must soon come to the limit of their capacity for happiness in this direction.

The most of these men devote themselves to some

special branch of physics, according to the taste or turn they may have acquired in early life. Thus, Audubon consecrated himself to the natural history of the feathered tribes—Linnæus to the study of botany —Agassiz to the study of the finny tribes of creation —and thus, others have devoted themselves to other branches of physical science. During the last half century, a majority, perhaps, of these students of physical nature, have devoted their time almost exclusively to geological studies.

As no one man can master the whole circle of the natural sciences in the brief span of life, this division of labor in the investigation of science is well, since the fields of knowledge will be more considerably enlarged, when these great minds give themselves severally and individually to some single pursuit. The whole realm of nature has to be explored. And though some may, in their ardent devotion to natural science, forget the God of nature, yet they are doing the world a great service; and we cannot be too thankful for their discoveries and contributions to science, in their particular departments. We know that but for the facts which they have brought to light in the geological department, it is doubtful if we should yet have been able to put the right construction on the language of Moses, in recording that great event, which changed the entire physical aspect of the globe.

There is another class—a much higher order of students, or seekers after knowledge, than the mere physicist—I refer now to those who are not content to stick in the details of some branch of physics—to spend

their lives, for example, in examining the scales or the eggs of fishes—or the bones of mammalia—or the number and variety of insects—or the variety of trees and plants in the world, etc.—which studies may all be interesting and pleasant in themselves, as doubtless they are to those engaged in them, though the knowledge thus acquired is not indispensable to the happiness of any, either here or hereafter.

But the higher students, or those who look on the organic universe as an effect, are not content to explore or examine effects, while the cause is unexplored, but inquire whence the universe came—from what first cause, the chains of confederate or second causes proceeded. They are our moral teachers—our philosophers.

Once in about a century such a teacher appears on the drama of the world's history. Lord Bacon was one of those profound teachers who could reason from cause to effect, and from effect to cause—and he was a philosopher. Moses and Plato, Confucius, Zoroaster and Socrates, were such teachers. We have not had many such philosophers in modern ages. John Locke was a philosopher. Sir Isaac Newton was a philosopher, as well as a scientist.

Not many such men appear above the world's horizon; and perhaps, not many such are needed whose opinions and maxims become laws to the world. Israel needed but one law-giver. Christianity had but one founder. But still there have been philosophers even in the church. Paul was naturally a philosopher as well as an inspired teacher; and taken all in all, he was, doubtless, the sublimest man who has lived since

Moses' day. To these two names, the world at large is more indebted than to any others who have lived in it, if we except Him alone who was more than a man —the God-man.

No matter who it is who is able to philosophize, and to moralize—giving us an insight as to our origin and our destiny—and can throw any light on those great and absorbing questions whence we came, and whither we are going—from whatever source he may obtain that light, he is a benefactor of his race. The mind of man is so constituted that he can never be satisfied while these questions remain unanswered. Look at the restless, discontented state of mind in which John Stuart Mill spent the most of his life. He seemed to be always laboring at these great problems, with an invincible purpose to solve them. But he never obtained entire satisfaction.

We want to know, if we have a father—if the universe has a father. We want to know whence all things sprung. This is a very natural inquiry. There is not a soul who does not ask this question. Even very young children often ask the question, "Who made me?" And we will never be satisfied till we have learned whence we came, and also whither we are going. And whoever can throw light on these greatest of all questions, will be held in lasting honor by his species.

It will be admitted without controversy that, if there be a God, who is the moral Governor of the universe, it concerns the happiness of all the subjects of that government to have some correct knowledge of Him; and all other science or knowledge without this, must prove insignificant and vain.

What are some of our modern scientists trying to do at the present day? They are trying to philosophize—trying to reason from cause to effect, and from effect to cause. But as they are only physicists, and not philosophers, they do not reason correctly. They are trying to show whence all things sprung—to show that the universe has no father—to show that there is no first cause of things. They cannot make out the proposition—they can never be sure of it—but they are trying to ascertain whether there is not a possibility that this may be the case, as they can never get beyond the possibility of such a thing—whether it is not possible that all the glorious things in existence, as suns, moons, and stars—angels, men and women, and lovely babes—beautiful flowers, and delicious fruits—whether all these glorious things may not have been *developed* out of the star-dust, or nebulous heated matter, without any God to assist, or help on this strange work or process of evolution! They are trying to ascertain whether it is not barely possible that the heated gaseous matter might have worked itself into these beauteous forms of life! They do not even expect to arrive at any degree of certainty, but only to show a probability, or a bare possibility that this grand evolution has been progressing from a past eternity. But suppose that they could show the bare possibility of this, they could never be sure of it. And would they ever be satisfied, themselves, with a conclusion involved in so much doubt and uncertainty? Would any intelligent or rational beings ever be satisfied with it? No! The human soul wants a more solid resting-place. Intelligent minds must have knowledge. They

cannot be satisfied with mere conjecture or hypothesis, where eternal interests are at stake. And the men who are wearing out their lives on these crude and profitless theories, which cannot stand the test of reason, but which must pass away quickly before the march of truth, as the morning mists are dissipated by the beams of the rising sun, are like bewildered men chasing a "will o' the wisp," who are only more and more hopelessly lost, the longer they continue the chase.

And now, to these materialists, I would say, "let us reason together"—let us argue the case—let us recur to first principles. And one of the first principles in sound philosophy is, that "from nothing, nothing can come"—the converse of which is equally true that *something must have come from something.* And what is it that has come? The glorious organic universe before mentioned, with all its bright suns, stars, and moons—its angelic beings—its men, women, and lovely babes—its blooming flowers, and beautiful birds—its delicious fruits—its sparkling gems and coral wonders —these all have come into existence. And they must have come from something, as an adequate cause. For the axiom says, that the cause must be adequate to the production of the effect. Here is design—here is intelligence—here is law and order—here is proof of wisdom,

> In every sun, in every glowing star,
> In every opening flower, in every shower,
> In every sighing breeze, in every note
> Of music in Creation's choral song.

Yea, glorious wisdom, matchless skill, and divine

order, surpassing human thought, are seen in all things.

John Stuart Mill admitted, that to him the argument from design, as manifested in the order of the existing universe, had the appearance of an inductive argument. And is not this the very conclusion that the wisest of the sages and philosophers of all ages have adopted? If, then, this wisdom, skill and glorious design have come from something, they must have come from something that was wise—something that had skill, contrivance and design in itself.

Let Messrs. Darwin, Spencer and Huxley theorize and speculate till they grow blind; and wear out their lives in crossing and intercrossing the different species of plants and animals in the vain expectation of creating a single new species, they will never be able to blot out this argument from design, which has, and which must have, the assent of mankind in its favor.

It is with profound regret—even grief, we must say, that we here quote some words, uttered, according to report, by Prof. Huxley, in his published lecture on biology, in which he institutes a comparison between a man and a dog, and comes to the conclusion, that, there is no difference between them in kind, only in degree. He said:

"Biologists turned to the physical organization of man; they examined his whole structure, his bone framework and its clothing. They resolved him into the finest particles which the microscope would enable them to break up; they considered his various functions and activities; they looked at the manner in which he was concerned on the surface of the world,

and then they turned to the first handy animal—say a dog—they professed to be able to demonstrate that the analysis of a dog leads to the same results, in the gross, as the analysis of a man. They find almost identically the same bones, having the same relation to each other. They can trace the nerves of a dog and the nerves of a man, and they find that the regions of sense are found in man, and are found in the dog. They analyze the brain and the spinal cord, and they find what does for the one, does for the other. Moreover, they trace back the dog and the man, and find that at a certain stage, the two creatures are not distinguishable the one from the other. They find the dog has a distribution over the surface of the world, comparable to that of the human species; and what is true of the dog they find to be true of all the higher mammals, and that for the whole of these creatures, they can lay down a plan comprising all in one great fundamental unity. Investigations of this kind proceeded step by step, and gradation by gradation, from man at the summit to a certain animated jelly at the bottom of the scale, so that the idea of Leibnitz that animals formed a graduated scale, although not exactly in the form he propounded, turned out to be essentially correct."

To which he added, that,

"Biologists had arrived at the conclusion that there was unity of animal and vegetable action, and that all varieties were but gradations of the same great plan. It was admitted that a great gulf separated man from the lower animals; but the difference was a difference of degree, not of kind."

The substance of this jargon—for what else can we call it?—is simply this, that all vegetable matter, and all animal matter, man included, is the same matter,

and that the regions of sense, or the reasoning faculty which they find in man, they find also in the dog, and that there is no difference between a man and a dog "*in kind, only in degree.*" And the proof of this is that by the help of the microscope, they have traced man and the dog back to the germinal principle—an infinitesimal particle of animated "jelly." And the jelly from which the dog is evolved, and the jelly from which man is developed, this scientist tells us, is the same jelly, and the one is not distinguishable from the other.

Now, if the Professor of biology could have explained by the aid of his microscope why, if the two jellies are the same "in kind," the one which is to produce a man, is never, by any mistake, developed into a dog, and the jelly which is to produce a dog, is never developed into a man, but each one, invariably, and by a fixed law produces its own kind, without the possibility of any mistake or confusion—if he could explain this, we might say, he had made a scientific discovery, never before known.

It is humiliating to think that ever it was possible for an educated human intellect to go to the length of supposing that a man and a dog are essentially the same in their nature, the same in their origin, and the same in their destiny. And the time will come, when the generations, better instructed in the living oracles, will express surprise that one in the form of a man, could have held such views.

It is possible at least, that even with the assistance of the microscope, these biologists could not discover any difference between the jelly in the ovum that is

developed into a dog, and that which is developed into a man, but does it follow as a logical inference, that there is no difference? A man and a dog are certainly different in their natures, notwithstanding the subtle reasoning of this scientist—their instincts are all different—they have not the same flesh either in degree or in kind—and even their blood, when analyzed, is found to be different, and therefore, there must be a difference in the ova from which a man and a dog are developed, and it is fair to conclude that the animated jellies, at the centre of the ova, about which the microscope has enabled them to talk, may also be different, although they do not detect the difference, even with the help of that wonderful instrument. It is not to be supposed that any man may become omniscient and able to investigate all the secrets of nature, by knowing the use of such instruments as the microscope and the telescope.

The trouble with materialists is, that they cannot believe in any thing, which they cannot see, or handle, or in some way take cognizance of with their bodily organs. They might possibly believe that "man is a man for a' that"—or that a man has a mind of his own, if they could see a mind or a spirit with their eyes, or handle it with their hands—or if they could invent some instrument that would bring it under the notice of their bodily senses. But they cannot see spirit, nor handle, nor taste, nor smell it. And the microscope does not, in any way, enable them to detect its existence. How then can they believe that man is in the possession of a living soul, which God infused into him at the beginning, or how can they be

supposed to know the exact difference between a man and a dog?

It is precisely on these grounds that they reject the idea of a God. God is a Spirit, and they cannot see Him. If they could demonstrate His existence mathematically, by instruments or in some other way, they would believe in Him. But as they can have no ocular or other sensible demonstration of His being, they have said in their heart, "there is no God."

The knowledge of the Supreme One is a necessity of the human soul. This is made manifest in the fact that there are many minds that never could be content with any pursuits or studies that do not lead to, or terminate at last in the knowledge of that Being who is the universal Father, the fountain and source of all things. Every philosophic mind wants to go to the source of things. It is in this respect, like the inquisitive child who ever keeps asking such questions as, Who made me?—Who made the sun?—What makes the sun shine?—What makes the flowers grow?—Where do the rain and snow come from?—and a thousand other similar questions. It is of the nature of the human soul to have such questionings. And it would be vain to endeavor to repress them.

It is true there is an order of minds that, as soon as they have passed the period of childhood, and become steeped in sensuality, try to settle down, contentedly, in a state of ignorance, as if all such inquiries in reference to the origin of things, were useless and vain. But there are other minds that keep on inquiring, investigating, and seeking all their days. They feel an inward persuasion to which they are not indifferent,

that there must have been a beginning of things—that there must be a universal Father, whose children they are, and they desire to know where they shall find Him, and how He may be found of them. It is as if one had been left an orphan, and should go on a pilgrimage, and continue to wander up and down in the world in search of his missing parents. There have always been some who, like Socrates, Plato, or Cyrus, have realized their orphaned state, and have ever, as the apostle says, been "feeling after God," if "haply they might find Him." We believe that, assuredly, He will be found of all such.

There is no knowledge that can be substituted for the knowledge of God, and none that, in importance can be compared with it. It is boundless—it satisfies, fills and enlarges the mind. The fields of natural science are limited, and might be explored. And if some mighty spirit should explore the whole field, and should come to the utmost limit of knowledge, there it would have to stop, as it could go no further. It would then be in a condition similar to that of the great conqueror, who, having subjected the whole world, sat down and wept, because he could not conquer other worlds. Mind is active, and man is active. He must have something to do. When stagnation comes, misery comes with it as a sure attendant. Witness the confession of that eccentric man, before named, when he said:

"Suppose that all my objects in life were realized; that all the changes which I am looking forward to, could be completely effected at this instant, would this be a great joy and happiness to me? An irrepressible

self-consciousness distinctly answered, no! At this my heart sunk down within me. The whole foundation on which my life was constructed, fell down. I seemed to have nothing left to live for." He waited for time, he says, "to roll the cloud away." He tried to sleep it away—he fled to his books, but they had lost their charm. For months the cloud thickened, and the gloom increased. "Coleridge's lines alone," he tells us, "could exactly describe his case:

> "'A grief without a pang, void, dark and drear,
> A drowsy, stifled, unimpassioned grief,
> Which finds no natural outlet for relief,
> In word, or sigh, or tear.'"

Such knowledge is chaff. It can no more satisfy an immortal mind, than the unsubstantial husks with which the starving prodigal endeavored to appease his hunger in a far-off country. Suppose that our evolution philosophers should succeed in establishing their theories to their own satisfaction, and should persuade all men to adopt them with an unquestioning faith—would they be satisfied? Would they cease from their investigations? Would their aspiring minds tire in the pursuit of knowledge? Would they have no further inquiries, leading them on and on to other and higher investigations? Could such minds ever settle down in the stagnation of utter repose? From the very nature of mind, that would be utterly impossible!

But suppose that they had exhausted the realm of nature—had exhausted the whole field of material science, and had solved every question, and every problem in physics—and that they had reached the utmost limit in this department of knowledge, would

their souls then be satisfied? Even to ask the question seems like mockery. Could they stop thinking? For, unless they could stop thinking, they would be thenceforward the veriest wretches out of hell, as they would be consumed by internal fires, burning out their own spirits for want of other fuel.

If man were not, by nature, a religious being; and if this fact were not susceptible of proof by all the evidence which it is possible to bring forward in support of such a proposition, there would be some plausible ground of justification, perhaps, for the efforts made by certain men to suppress the religious aspirations of their nature. But this is a warfare against humanity itself, which can never succeed. If all the altars of religion were burned down to-day, they would presently, like the bird in the fable, spring up again from their ashes. The experiment has been tried once, twice, thrice, yea, a hundred times. It is wonderful that men who boast of their intellectual sagacity, do not perceive that the contest which they are waging, must end, at last, not in the uprooting of religion, but in a fearful reaction against themselves.

There is physical science—there is moral science—and there is religious knowledge. And the importance and value of these several branches of knowledge, can be estimated only by their relative bearing on the destiny of man, and their adaptability to meet all the wants of his nature. If man had no soul—no religious nature, he would have no religious feelings and propensities, no more than the dog or the monkey has them—he would have no quenchless immortal aspirations, going out towards God and a higher life, no

more than a dog can be said to have these emotions, and he would not be different in this respect from a dog, and if Prof. Huxley could demonstrate this proposition, by his microscope, or in any other way, he might think that he had some plausible foundation for his theory.

These higher aspirations—these spiritual emotions, hopes, fears, and quenchless desires, peculiar to man wherever he is found on the face of the globe, seem to indicate a higher nature than can belong to any mere material organism. There is nothing in physical science to meet the wants of man's nature. There must be a divine science from some source—a knowledge that is responsive to the questionings, not to be ignored or suppressed, that come up from the depths of his innermost nature. That knowledge cannot come by evolution. That knowledge can come only by a direct Revelation. If our poor oppressed humanity is ever to enjoy a millennial age, it will have to be brought about by some such Revelation. And that Revelation must be the Bible. Evolution can never work a reformation, or bring about a millennial age.

And yet, if we are to give credit to statements made by the publick press, one of these modern philosophers, Herbert Spencer, is, at this moment, devoting all his energies to the task of trying to prove that all the enlightenment and civilization now enjoyed by the nations, has resulted from the law of evolution, working slowly but steadily through the ages, and also, that the same law must work a millennial age, in the course of revolving centuries. That would, indeed, be a blessed consummation, and one that, I believe, is to

come on the world, but not exactly in the way which this philosopher indicates.

The term *Evolution*, is intended to express the idea that in the original and essential nature of things, there is a law of progress. Development is another word used to express the same idea. And they coin such phrases as "*the survival of the fittest*," to indicate the same notion. And they would have the world to accept of these empty terms and phrases, and thereby to accept the idea they are intended to convey, although there is no such law of progress in the essential nature of things as they speak of—and never was —and never can be.

I have to confess to a certain degree of ignorance as to the details of this wonderful law of progress as explained by this ingenious theorist—Mr. Spencer. But it is substantially expressed by another word which, probably, he coined for the purpose, the word *environment*, by which he means to teach that individual or national character, viewed physically or morally, is the result of the circumstances and conditions that environ or surround all persons in life, and during their birth and education. That is Spencer's materialism. And there is the law of absolute necessity, as no individual can be supposed to have any choice in the arrangement of the circumstances or conditions that surround him, before and after his birth, on which his character and destiny depend. But how can there be any progress, or any development here? The idea is self-contradictory.

We know that when melted lead is poured into the moulds for making bullets, the bullets will exactly fill

the moulds, but can never be any larger. The environment will prevent any evolution or enlargement. If bullets, passing through the same moulds, could always be enlarging so as to become cannon balls, at length, perhaps, we could adopt Spencer's idea of environment, and come to believe at last in the possibility that monkeys might be developed into men, and that matter has been transformed into mind. But we want a syllable of proof—we want an argument—we want one solitary fact in evidence, before we consent to surrender our belief in the old philosophic axiom, that "a stream cannot rise above its source."

We have seen a whole people revolutionized in half a century—giving up the habits, the customs, the hereditary faith and religion of their forefathers—adopting new customs, a new religion, new laws, etc. Look at the inhabitants of some of the islands in the Pacific—look at the present condition of the Choctaw and Cherokee Indians. In the year 1820, they were as wild and savage as the Sioux are to-day. They will compare favorably, to-day, with the most civilized nations. They have schools and churches. They have laws and legislatures—and they have orators and statesmen, some of whom would be a credit to any country. An Indian maiden sent a piece of needle-work—an embroidered quilt for exhibition at the Philadelphia Centennial Exhibition, which it is said, was, probably, the finest piece of needle-work ever executed, having 18,000 pieces stitched together by hand, with the names of the several chiefs of their tribe wrought in it, in the most exquisite manner. Are these instances of progress, proofs of the doctrine of evolution?

If they would give us a fair illustration of their theory of evolution, let them take us to India, or China—the nations of hoary antiquity, who pretend to have records extending back many thousands of years —why have not they been developed? Why are the natives of China stamped with the features of their ancestors of a hundred centuries ago, if we credit their own historic records? And why do they still worship the same idols, which their heathen progenitors worshipped? Why has there been no progress, if evolution has been doing its work, during all these centuries? If they can notice no advancement in a hundred centuries, how do they know that there has been any in a thousand centuries or in a million years? What are the facts on which they predicate the idea that there is an eternal law of progress in the essential nature of things?

There is Egypt—there is Greece—and there is the old imperial Rome, which have been known to authentic and classic history for three thousand years—is it not reasonable to suppose that, if this law of nature has always been in active force, as these philosophers pretend to believe, these renowned nations of old, should have made, at least, the slightest perceptible degree of progress in the lapse of thirty centuries? We know that Egypt was, in the time of Moses, not only the granary of a large part of the world, but the seat of learning, arts, and science. Moses was himself indebted for, perhaps, all his natural acquirements, to Egypt—for it is said that, he was "learned in all the wisdom of the Egyptians."

And what country was ever more famed for the arts

of eloquence, painting, music, arms, sculpture, poetry, philosophy, and great men than ancient Greece? Have Egypt and Greece held their own? Have they made any progress in forty centuries? Is there any sign of development in the written or the unwritten history of these countries?

No; if they want to produce any genuine examples of evolution, they have to turn to Scotland, England, America, Germany, or other countries that have been, partially, brought under the influence of the Bible. There they find progress, and just in the proportion or to the extent that the Bible has been permitted to have sway. This is an argument that all can understand. There is no theory about it. It is a grand, world-wide fact. It is not mere idle farrago and empty jargon about molecular motions, and hypothetical nervous forces, and a something called *environment* working out evolution, as they say, contrary to all the principles of natural philosophy as formerly understood. But here is something that all men can see and understand.

Take the little, bleak, and rocky isle of Scotia—what was it when the three countries, before named, were successively giving laws, and learning, and civilization to the known world? Scotland was not then known, and for centuries after, it was the habitation of barbarians. But what is it now? and what has it been since John Knox gave it the Bible? Will they say this is evolution? Yes, it is evolution; but it is the kind of evolution that always follows, and always must follow where the Bible goes before.

The effect of the diffusion of the divine science

which the Scriptures alone can impart, is as well assured, as the established and unalterable relation between cause and effect can make it. A tree may be known by its fruit. "A good tree cannot bring forth evil fruit, neither can a corrupt tree bring forth good fruit."

Look at the Bible—what kind of a tree is it, and what kind of fruit may be expected to result from the circulation of it among the nations? There is no question that the moral law written therein, as the rule of conduct for all men, is a law absolutely perfect, denouncing sin in all its forms. And the character of God is portrayed in the splendor and beauty of holiness, as a God infinitely and eternally opposed to sin, and requiring holiness of heart and life in all His creatures. Now let this law be published, and this knowledge be made known to the ends of the earth—and let it be understood that God is the Governor of the universe, who will judge all men according to their works, and could there be any doubt as to what the result would be on the moral condition of the world? It is said that the character of a people may be known by the characters they ascribe to the gods they worship.

Not only would the moral character or condition of a people be elevated, by the circulation of the knowledge contained in the Scriptures—not only would they be, thereby, reclaimed from the depths of degradation in sin and crime, but their intellectual character would be raised in a corresponding degree. For, indeed, the intellectual character of a nation must always bear some relation to their moral state, and be, in some

sense, dependent on it. A people greatly sunk in their morals, are not disposed to devote themselves to the higher pursuits of life—they have no taste for intellectual studies—and they prefer to wallow in their beastly sensuality. But let them be recalled to a holy life—let them be recovered from their moral degradation, and they will begin, at once, to cultivate the higher and nobler faculties of their nature.

But, independently of this consideration, the divine science contained in the Bible, furnishes themes of thought and contemplation, which, in interest and grandeur to the human intellect, far outweigh all other themes or studies. There is no comparison. Our modern scientists spend their days and nights, and are wholly absorbed in the contemplation of fossils and shells of every species—and in studying the bones and entrails of mammals—and other kindred studies.

The student of the Bible consecrates his leisure hours, and the energies of his mind to the study of divinity—of the nature of the soul of man—the cost of its redemption—the nature of moral accountability—the doctrine of free-will—the doctrine of the Incarnation—the mystery of the Trinity—the mystery of the Godhead. Does natural science furnish any such themes as these?

How does any mind become great, except by the contemplation of great and worthy themes? It would be scarcely reasonable to suppose that an intellect could be much expanded or ennobled, that should be always occupied in looking through a microscopic lens, at the motions going on among the sporia inhabiting some putrid body, and contemplating the metamorphoses

supposed to result from these changes, from the maggoty worm to other forms of animal existence. Even if such studies should be congenial, and to the taste of a certain order of minds, it is yet difficult to conceive how the contemplation of them should enlarge the intellect, or strengthen its faculties.

But to believe that man has a living soul—which the materialist cannot believe—and to be intently occupied in contemplating the nature of the faculties and the capacities of that soul, and the immortal destiny that awaits it—that is a theme to call into activity all the latent powers of an immortal spirit. Or to believe that there is such a thing as moral law, which the materialist does not, and cannot believe consistently with his principles, and to be employed in studying the essential nature of that divine and perfect law—this is another theme worthy of one made originally in the likeness of God.

Again, to obtain by Revelation, just a little knowledge of the doctrine of the Trinity—a sublime doctrine of which no finite mind could have any idea except by Revelation—this would furnish another theme, on which the strongest intellect, and the most angelic and sanctified minds might dwell eternally, growing still stronger thereby, and rising ever, still higher in the scale of existence, and growing more and more into the likeness of God, without the possibility of ever exhausting the theme.

Another theme found nowhere but in the Bible is the doctrine of free-will, which affords interest to every great intellect—to every pure mind. It is not easy to master the study; but it is one that never loses

in interest to one who has a taste for high and intellectual pursuits.

But there are a thousand themes, like these, bound up together in the sacred volume—revealed, but not fully explained—which are to be studied, and by the study of which the souls of God's people are to be fed with knowledge. But these are themes that never challenge the investigation of our materialistic philosophers. What do they care to know anything of the holiness of God—of the justice of God—the mercy of God—or of the harmony that obtains between these Divine attributes? This inexhaustible theme alone, will be the wonder and glory of angelic minds and redeemed spirits, through eternity. But what do these philosophers care for the question, how God can be just, and at the same time extend mercy to the guilty? This is the mystery that was hidden from generations in the ages past, but has been made known or has begun to be revealed in the present dispensation, but which it will require all the ages to come fully to reveal.

Now, I am not assuming anything, when I say, that themes of this nature, when brought before the minds of the children of men for their attentive consideration, are adapted not only to refine and purify their moral nature, but to expand and ennoble their intellects. Indeed I might lay down this as a proposition, that the field of Divine knowledge offered in the Bible, is a system of study adapted to bring the human intellect up to the highest degree of perfection of which it is susceptible, and the only system of study which can produce this result.

I state this proposition, though I am quite aware, that, there has never yet been an opportunity fully and fairly to test it. But we may hope that the day is not distant when it will be tested and proved. What I may affirm with a degree of the utmost positiveness is, that the great minds, whose influence is most felt at present, in controlling the affairs of the world, are such as have been moulded and trained under the light and teachings of the Bible. I do not mean by this to say that they are all believers in the Bible, but that their education has been to a great extent at least, moulded according to studies that are to be traced to the Bible alone. No one could receive his education in a Christian land, and in the midst of Christian institutions, without experiencing any of the reactionary influence thereof in the development of his mind. There are scientists, and sceptical writers, and professors, whose names would not have been much known in the world, but for their indebtedness to these Christian influences, in their early training.

I believe it is a fact that since the days of the reformation, the mass of the publick mind in Scotland, has been more thoroughly permeated or imbued with the knowledge of Bible truth, than the population of any other land. And as the consequence of that peculiar training, what is the spectacle that little isle of bleak and barren cliffs presents to the world to-day? Nearly all the great and original thinkers of modern times—the great preachers—the metaphysicians—the teachers of moral science—the philosophic historians have been produced by Scotland. At least, if we look only

at the populations of countries, Scotland has furnished tenfold more than her just proportion. The reason of this is to be sought for, in the principles already explained. O, for the day to dawn, when this system of education shall be fully carried out, and tested in all countries. Then oppressed and degraded humanity, loosed from the shackles of ignorance and sin, will rise up from the dust of ages!

THE END.

Princeton Theological Seminary Libraries
1 1012 01252 5046